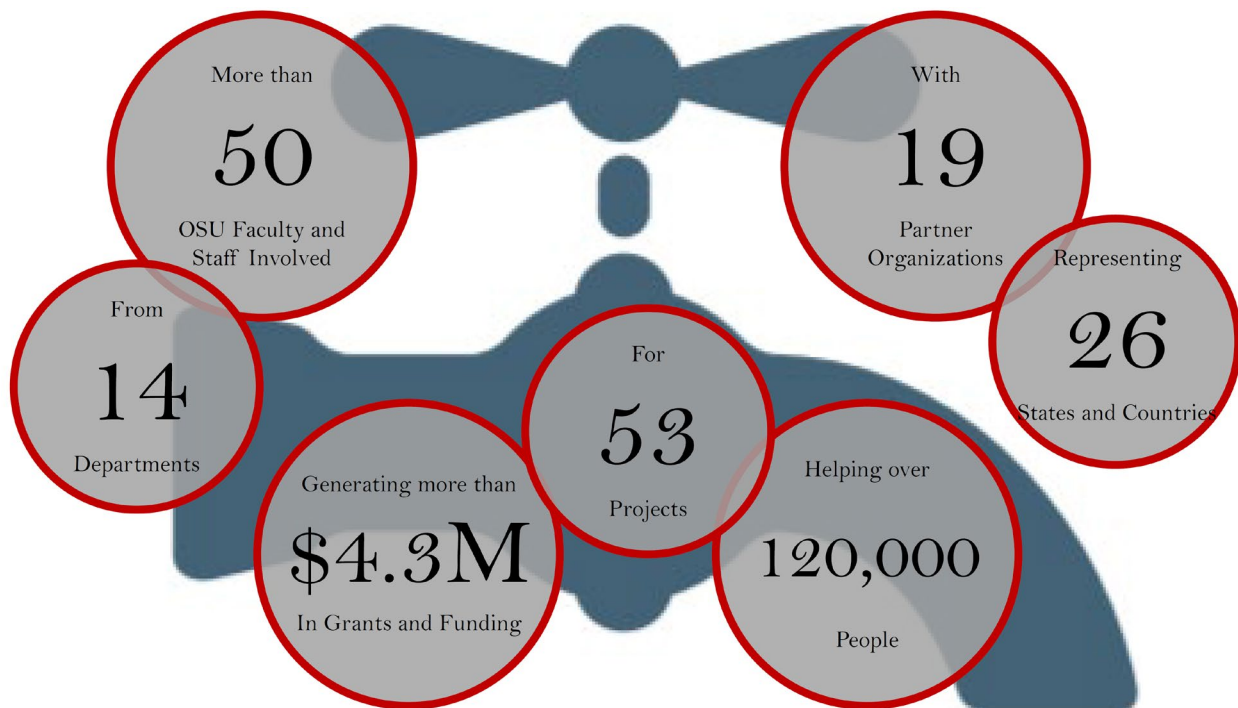


# Global Water Institute Fiscal Year 2018 Annual Report



**Submitted 14 December, 2018**



*Snapshot of GWI FY18 Activities*

*Image credits from front cover, previous page:  
 Top row from left: Scott Shearer, Scott Shearer, Bahati Hakimu, Rebecca Gianotti.  
 Bottom row from left: Diane Gorgas, Scott Shearer, Jeff Melaragno, Scott Shearer.*

## Introduction to the Global Water Institute Annual Report

On behalf of the Ohio State University Global Water Institute (GWI) Team, I am pleased to submit our 2017-2018 Annual Report. Due to the high level of activity from July 2018 to December 2018 and its relevance to one's overall assessment of GWI, some of these key activities and events have also been included in this Report.

GWI was created in March 2016 to solve pressing global issues – at the regional, national, and international level. GWI is a requirements-based, customer-focused, solutions-oriented Institute. GWI is an Institute focused on applied research and the integration of Ohio State and external assets to solve complex systems challenges. Integral to the GWI Model is its integration of the best features and attributes of other Ohio State applied research activities co-created by the GWI Team – Ohio Federal Research Network, Harmful Algal Bloom Research Initiative, and Agriculture Data Coalition.

The GWI Team is pleased to report that as of 2018, GWI has gained external recognition for its ability to frame and execute systems solutions and it has become a partner of choice for innovative projects and activities with other globally recognized organizations. Most recently, Purdue University asked GWI to be the rural water lead for its new USAID LASER Program – Long-Term Assistance and Services for Research, funded by the USAID Global Development Lab and USAID Missions in least developed countries. The LASER programs will significantly expand research opportunities for OSU faculty and students in 2019 and beyond.

The team is also pleased to report it secured two USAID funded-projects in 2018 in collaboration with the Global Environmental Technology Foundation (GETF): a Water and Development Alliance (WADA) grant and the Governance Research on Water Systems (GROWS) research award. Both initiatives put OSU faculty members and students to work. GWI is now working with WaterAid to secure donor funds to layer each well it installs under the WADA Program with hygiene and sanitation facilities in each school and clinic, and new agricultural activities.

The WADA Project will provide clean water to over 120,000 Tanzanians living in 36 villages in what the Government describes as “critical needs villages”, villages that have not had access to clean water for 3-5 years. The project kickoff event for this initiative was held in Dodoma, Tanzania, in June 2018 and included representatives from the Tanzanian Government, USAID, Coca-Cola, University of Dodoma, Majitech, GETF, and GWI. WADA was the anchor project GWI identified as a “must win” to give Ohio State standing in East Africa and to validate the GWI Sustainable Village Water System Model.

Key to GWI’s success at USAID in 2018 was its funding of 45 village site assessments in Tanzania in 2016 and its Sustainable Village Water Systems (SVWS) Pilot Project launch in November 2017 in two villages in the Singida Region of Tanzania. The latter was done in collaboration with WorldServe International, WaterBoys, Global Partners for Development, WaterAid, Trees For the Future, and BM Farm Africa. The Pilot was framed to validate the SVWS Model, assess the team’s ability to work together, give GWI a competitive procurement edge, and provide clean water to 6,000 people. The latter outcome will occur by the end of 2018 and OSU faculty will have new research challenges in 2019.

To further enhance faculty and student opportunities, GWI recently framed a new collaboration with the Ohio State Global Gateways, the Global Villages Initiative (COE and CFAES), and the College of Engineering's International Programs Office to expand student and faculty project activities at the 40 GWI field sites in Tanzania. It also secured approval for a collaboration with the Tanzanian Ministry of Health, the National Laboratory, the Office of Preventive Medicine, WaterAid Tanzania, and the Abbott Foundation of Tanzania for an emerging and re-emerging disease network to monitor, detect, diagnose and treat diseases. The latter initiative integrates capabilities at TDAI, IDI, CPH, and GWI. The faculty lead for TDAI is the designated PI.

As of FY18, GWI has a revenue stream, it is generating F&A for several colleges, and it is funding Ohio State faculty and students to conduct research. It also has a set of products that are greatly influencing economic development activities in East Africa, and the forecast for FY19 shows continued growth and recognition for OSU and GWI.

Key to the success of GWI in 2017-2018 was the effort put forth by the GWI Team, OSU faculty and students, external partners, key strategic alliances with US and international partners, and the sage advice and counsel of its External Advisory Board and Faculty Advisory Committee.

So what's next for GWI?

Clearly, GWI wants to secure funding for more projects, research activities, student and faculty engagement projects within the three GWI thrust areas – Wells to Wellness, Coastal Resilience, and Field to Faucet. Our key procurement target for next year is a MacArthur Foundation Grant, a \$100M grant focused on Sustainable Village Water Systems in East Africa. Additionally, USAID and foundation grants are also on the GWI business development target list.

GWI would also like to stimulate design-to-cost capstone projects that address key needs in East Africa where the average daily income is \$1.25. Initial focus will be on food storage, low cost cook stoves, and defluoridation. This would be a great experiential learning activity for faculty and students alike and enable key collaborations with African universities and Big Ten Schools.

GWI also aspires to gain traction for its franchising water services concept and to expand its SVWS model across East Africa. The former has the strong support of our External Advisory Board and we are already gaining traction for the latter in Kenya and Zambia.

Finally, and most importantly, we hope to attract more faculty, staff, centers, institutes, and OSU leadership to our efforts. The GWI Team believes Ohio State can and should be the Land Grant University of the Future – a university able to integrate its assets with those of others to deploy sustainable systems solutions for pressing global issues.

With your help and support, that GWI goal can be a reality.

Martin P. Kress  
Executive Director, Global Water Institute





*Image credit: WorldServe International.*

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***Sustainable water systems exist at the nexus of  
water, food, energy, and health.***

***- GWI Mantra***

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# 1. INTRODUCTION

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*“One of the issues that we think of as so important in the 21st century is the issue of water. As I have said before, the 20th century was to physics and oil as the 21st century will be to biology and water. Those will be the real places of growth and the real threats to our continuation.”*

*President Michael V. Drake, M.D.  
The Ohio State University*

*Comments to the Tanzanian Minister of Water, August 2015*

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## GWI PROBLEM SET

Globally, nearly one billion people lack safe drinking water, and nearly three billion people lack adequate sanitation. Lower than anticipated snow mass in the Himalayas impacts water supply across China, India, and in particular Bangladesh and climate change has started to impact Sub-Saharan Africa. Here at home, water quality continues to be an issue, as contamination has jeopardized the water supply in Toledo and algal blooms threaten the entire state of Ohio from Lake Erie to the Ohio River. Meanwhile, coastal communities across the globe, large and small, are dealing with sea level rise and the effects of global climate change. Agencies including the World Health Organization, the World Bank, the United Nations and the National Oceanic and Atmospheric Administration have declared that water quantity, quality and access issues will only increase as population rises and the climate changes.

Today, GWI is a viable, stand-alone research entity at Ohio State University as well as a partner of choice for internal and external partners. The project side of GWI lends itself to the interdisciplinary engagement being sought by new faculty hires and pre-tenure faculty at Ohio State, people that share a research interest with real-world applications that GWI supplies: sustainable village water systems, surface and subsurface water resources research, improving access to agricultural extension, improved food storage capabilities, drought-resistant crops, low-cost filtration systems, and sustainable provision of food, energy, water, health and sanitation.

The current portfolio of GWI activities and its focus on a blend of traditional and non-traditional funding provides Ohio State faculty and researchers with unique opportunities to work on pressing global issues. Having a pathway to non-traditional research funding opportunities, such as foundations and international organizations, for water-related issues is also important in a period when federal and state support for basic research is projected to decline and when foundations and firms are supporting more solutions/applications-focused research initiatives.

## **GWI – A NEW MODEL FOR RESEARCH AND PHILANTHROPY**

The Global Water Institute at Ohio State stimulates requirements-driven research by conveying to researchers the real-world technical, social and ecological conditions that underpin the water resource issues faced by its partners. GWI relies upon experts in the field (including government agencies, NGOs, other not-for-profits, university and industry partners) to identify the requirements and constraints surrounding an issue—what tools, processes and knowledge do they need to be able to meet their goals. GWI then gathers faculty and external experts to meet the customer needs, whether through research that generates new knowledge or interdisciplinary integration of novel and best practice tools and knowledge into new projects. As an integrating entity with a sustainable systems approach to complex issues, GWI also is working to achieve status as a “one-stop shop” for philanthropic entities seeking to make maximum impact in an area of concern (e.g. lack of clean water access in rural Africa, watershed degradation in the Midwest U.S., recurring coastal refugee crises after storm events).

Some unique aspects of GWI include:

- Systems focus: GWI develops end-to-end (as opposed to component-oriented) systems solutions that are economically viable, environmentally sound, socially acceptable, and technically maintainable.
- Broad perspective: The three current focus areas of GWI demonstrate that a wide range of water resource issues can be successfully tackled with the same essential approach. This both leverages the breadth of Ohio State and partner expertise and allows GWI to retain its role as an innovation cell rather than a dedicated center focused on a single topic area.
- Globally relevant: GWI development priorities align with United Nations (UN) Sustainable Development Goals, UN Global Compact Principles, World Business Council for Sustainable Development Action 2020 Priority Areas, and the goals and objectives of its governmental partners.
- A “Hub” for water experts: GWI links Ohio State’s water assets with other research institutes, government, NGOs and industry entities.
- Requirements-driven: GWI facilitates research motivated by the needs of water, food, energy, hygiene and sanitation users and the philanthropic and/or technical requirements of funders.
- Catalytic funding: working to leverage and layer each dollar invested with another dollar if not two. Requires the integration of key investors around key themes.
- Lasting impact: GWI supports locally owned and operated projects (often women-owned) for lasting economic, social, and environmental impact.
- Technical support: GWI will provide virtual communications between user

communities and the network of experts they need to contact.

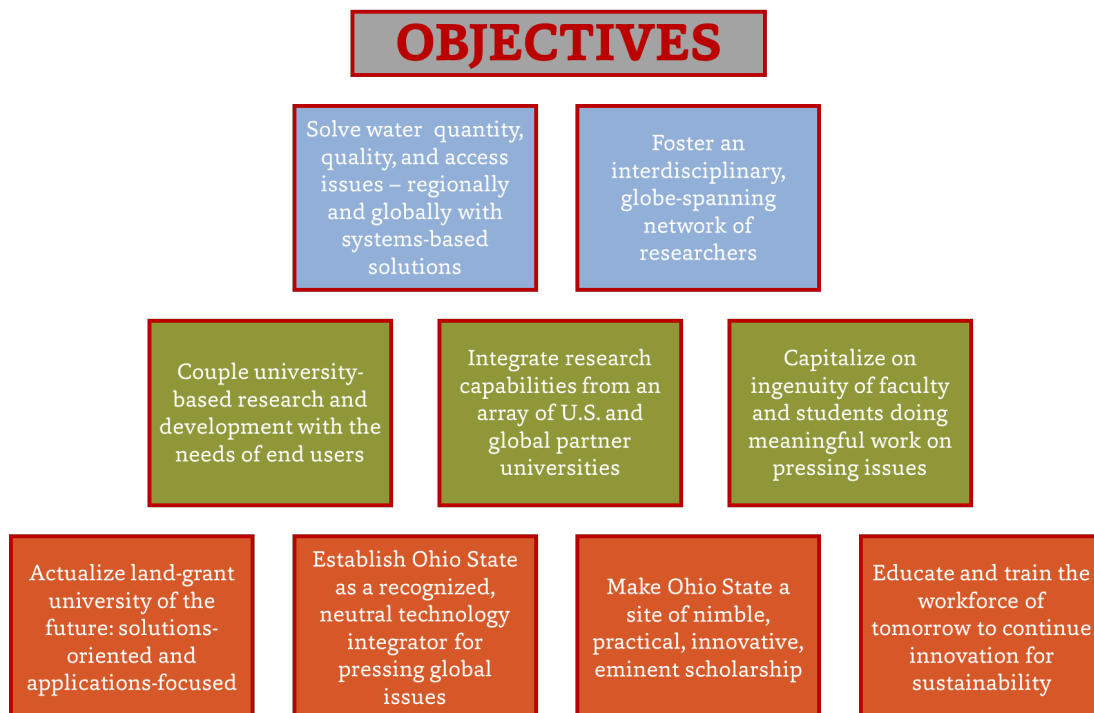
- **Training:** GWI activities will develop the next generation of water innovators – both undergraduate and graduate students as well as young people in user communities – through distance education.
- **Innovative Business Models:** GWI integrates market-based solutions when feasible, including framing business models, to enable the deployment of sustainable solutions that will lead to long-term improvement in water resource issues. An example is the in-country franchising model being assessed for the Wells to Wellness focus area.

## MISSION

The mission of the Global Water Institute at Ohio State is to provide sustainable systems solutions for communities facing water resource challenges. Sustainable systems solutions are ones that are economically viable, environmentally sound, socially acceptable, user-driven, and technically maintainable.

## VISION

The vision of GWI aligns directly with that of the university: to establish Ohio State as “the world’s preeminent public comprehensive university, solving problems of worldwide significance.” By approaching problems at the nexus of water, food, energy and health in a new and innovative way, GWI will help to position Ohio State as a global thought leader in this space. GWI’s emphasis on applied research and requirements-based design supports President Drake’s Vision 2020 emphasis on solving “critical issues of our time,” and GWI’s commitment to integrating disparate assets at Ohio State reinforces his conviction that “our collective efforts can and will transform lives.”





## **GWI SPECIFIC PROBLEM SETS**

Since its inception, GWI has been focused on Problem Sets. Initially, GWI's focus was on both the Western Lake Erie Basin, in particular Lake Erie, AND developing nations, but most recently it has been focused on East Africa, in particular Tanzania.

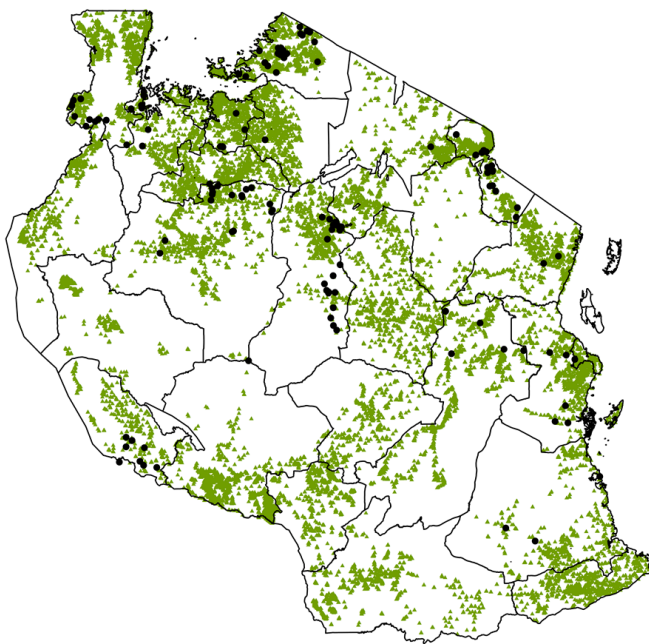
To illustrate the current problem sets for GWI, let's use Tanzania as a mini case study.

When GWI was approached by the Tanzanian Ministry of Water and Irrigation (MOWI) to help find approaches that would enable him to feed his people, GWI started with assessing the correlation between access to water and the production of crops. GWI found that 83 percent of Tanzanians were subsistence farmers – reliant upon rainfall to generate one crop a year due to lack of water, use of irrigation is limited.

GWI also discovered that food waste is nearly 40%. Precious water resources are not being optimized. Tanzanian farmers have limited access to markets and most have never encountered an agricultural extension officer. Whereas farmers have the ability to store maize, perishable crops like tomatoes have to be sold in local markets or consumed by the farmer, or left to rot since food storage, refrigeration or food processing for such crops is very limited.

GWI also came to realize that in most villages there are more cows and goats than people. And whereas a person can exist on 5 liters of water a day, a cow needs about 30-50 liters a day.

When GWI sat down with the MOWI, it was shocked to find there were 34,000 inoperable water points in Tanzania (see Figure 1) and that Tanzania, along with other Sub-Saharan African countries, had no database providing insight into the health of Tanzania's surface and subsurface water resources.



*Figure 1: Inoperable water points (green) and 125 candidate sites for GWI's water point rehabilitation program (black).*

In meetings with NGOs, international banks, and not-for-profits, GWI discovered that most relied upon a single near-term measure as the measure of success – installation of a well. Not the installation of a well that was operational for ten years, or a well that reduced water borne disease or stimulated local economic activity, but simply the activity on day one.

After assessing the failure modes that caused these outcomes, GWI realized that its problem sets came to sit at the nexus of water, food, energy, and health, and if it were to have an impact on the grand challenges that face Africa – secure access to water and food, access to power, and reduced incidence of waterborne diseases – it needed to create a new model for economic development in Sub-Saharan Africa, a sustainable systems model, and it

needed to support and promote research activities that were directly aligned with the core challenges of making this shift.

Towards that end, GWI identified a set of problems to be solved and it has focused its R&D and proposal activities towards these problem sets:

1. Secure access to sustainable supplies of clean water
2. Capitalize on renewable energy systems to reduce operations costs and maintenance requirements for newly deployed systems
3. Train technicians and increase access to supply chains to ensure operations
4. Generate economic activities for each village, with a focus on agriculture
5. Reduce waterborne disease for children and increase school attendance
6. Train farmers to increase yields of crops, including higher nutrition crops
7. Provide farmers with access to new markets
8. Understand the availability of water resources and optimize the use of this scarce resource
9. Capitalize on mobile phones for remote monitoring of systems, business operations, training, and market information
10. Assess emerging technologies that could address core issues – water defluoridation, food processing, food storage/refrigeration, siting water resources, drought resistant crops, remote monitoring of operations, remote training and agricultural extension services, etc.

Over the last two years, GWI has made some initial progress on these problem sets. Perhaps most importantly, it understands their linkage and the current state of the art. But if we are to successfully address these problem sets and to provide sustainable solutions, it is clear, we need to heed the call of Robert Gates.

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*“Why aren’t we integrating the assets of our nation’s land grant universities to solve these pressing global issues?”*

*Robert Gates  
Former Secretary of Defense  
Former President of Texas A&M University*

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GWI would like to think that integrating Ohio State assets represents step one to Secretary Gates’ call for action. But as you will discover in our Annual Report, we are considering design competitions for some of the problem sets with other Big Ten Universities.

## 2. GWI VALUE PROPOSITION

Since its inception in 2016, GWI has taken great strides in a very short time towards advancing its own mission as well as the university's mission and core goals.

*Table 1: GWI Value Proposition*

| Activities and Funding  | Outcomes and Benefits   |
|---|---|
| <p>\$2 million WADA award (2018-2020) to implement a new approach to sustainable water system management in rural Tanzania providing clean water access to 120,000 people, funded by:</p> <ul style="list-style-type: none"> <li>- \$1 million grant from USAID and the Coca-Cola Foundation</li> <li>- \$1 million match from WorldServe International and NFL Waterboys</li> <li>- \$25,000 beyond the match from Global Partners for Development</li> </ul> <p>Follow-on WaterAid fundraising activity seeking \$7 million, currently being vetted with donors</p> | <ul style="list-style-type: none"> <li>- \$99,101 F&amp;A to ASC</li> <li>- \$100,000 for hydrology research project, led by Audrey Sawyer (School of Earth Sciences) with tuition for two students in ASC</li> <li>- New relationships with USAID, Coca-Cola Foundation and international partners to foster a growing GWI research portfolio and open new funding opportunities for OSU</li> <li>- New recognition for OSU as global water solutions provider</li> <li>- Platform for student and faculty engagement, capstone projects, study abroad and internships, expansion of agricultural extension activities</li> <li>- Follow-on grant through WaterAid would provide \$2.5 million to OSU, including \$650,000 for agricultural research and \$75,000 in F&amp;A as well as \$1.8 million in subcontracting for agricultural activities in Tanzania</li> </ul> |
| <p>\$2 million award (2018-2021) from USAID to do research on rural water system management practices in Tanzania, Kenya and Uganda</p>   | <ul style="list-style-type: none"> <li>- \$278,964 F&amp;A split evenly between CFAES and ASC</li> <li>- Salary and fringe for two faculty (Amanda Robinson in ASC and Mary Rodriguez in CFAES) and GWI research manager</li> <li>- Salary and tuition for two graduate students for two years</li> </ul>   |
| <p>Pending additional USAID funding of approx. \$1.5 million via LASER</p>  | <ul style="list-style-type: none"> <li>- New recognition for OSU as leader in development-driven hydrogeology research</li> <li>- F&amp;A to OSU, direct funding support for faculty and students</li> </ul>  |
| <p>Faculty engagement and participation across the university, especially supporting pre-tenure faculty with seed grants and opportunities for publication</p>  | <ul style="list-style-type: none"> <li>- \$173,000 in faculty research grants provided from GWI funds (2017-2018) <ul style="list-style-type: none"> <li>- ASC (\$50,000)</li> <li>- CFAES (\$50,000)</li> <li>- OIA (\$25,000)</li> <li>- College of Medicine (\$25,000)</li> <li>- FCOB (\$23,000)</li> </ul> </li> <li>- Faculty Advisory Committee – 7 colleges engaged</li> </ul>  |
| <p>Productive student engagement investments</p>  | <ul style="list-style-type: none"> <li>- 9 Graduate research assistants</li> <li>- Supported 9 Capstone courses (54 students) in CFAES, COE and FCOB</li> <li>- 8 Internships</li> <li>- 3 senior Honors theses completed with distinction using GWI data, networks and resources</li> </ul>  |

| Activities and Funding  | Outcomes and Benefits   |
|---|---|
|   | <ul style="list-style-type: none"> <li>- 2 undergraduates presented at national conferences</li> <li>- 2 students are co-authors on a journal paper in review</li> </ul>  |
| <p>Strong campus-wide communications and networking program</p>   | <ul style="list-style-type: none"> <li>- 27 seminars and events co-sponsored</li> <li>- Led Voices from the Field seminar series with 16 faculty presentations and 240 student participants from 14 departments across campus</li> <li>- World class website and information portal</li> <li>- Multiple well-managed social media channels</li> <li>- Highly professional collateral</li> </ul> |
| <p>Highly accomplished and networked international External Advisory Board</p>  | <ul style="list-style-type: none"> <li>- New course in franchising to be taught at FCOB by a GWI EAB member</li> <li>- New relationships with international banks, foundations, governments and NGOs</li> </ul>   |
| <p>Co-developed the highly regarded Harmful Algal Bloom Research Initiative (HABRI), managed by Ohio Sea Grant</p>  | <ul style="list-style-type: none"> <li>- Helped to attract \$8.5 million to OSU for HABRI-related research funding</li> <li>- Positioned OSU into a leadership role to address a critical state and regional water/agriculture problem set</li> </ul>   |
| <p>Well-placed for future opportunities to develop a planned 125-site research platform in Tanzania to support long-term studies in agriculture and hydrology</p> | <ul style="list-style-type: none"> <li>- Opportunity for a major international research project to develop the first real-time groundwater monitoring network in sub-Saharan Africa</li> <li>- Long-term longitudinal study possibilities for agricultural advancement, hydrology, infectious disease transmission and community development</li> </ul>   |



Figure 2: GWI's Marty Kress (front row, third from right) and Rebecca Gianotti (front row, left) with CFAES Dr. Scott Shearer (front row, right) visit with the community of Unyakhanya, central Tanzania, as part of GWI's Water and Development Alliance Project. Image credit: GWI.



### 3. ORGANIZATIONAL STRUCTURE

The GWI organizational chart (see below) depicts a lean organization. At present, GWI has five assigned billets but only four are staffed. The Communications and Networking Director is a key slot that GWI hopes to fill in early 2019. It is central to internal and external communications and proposal formulation.

GWI has a cost share with the Fisher College Of Business (FCOB) for two graduate students, MBA candidates, and it has a cost share with the Infectious Disease Institute (IDI) for its Business Manager.

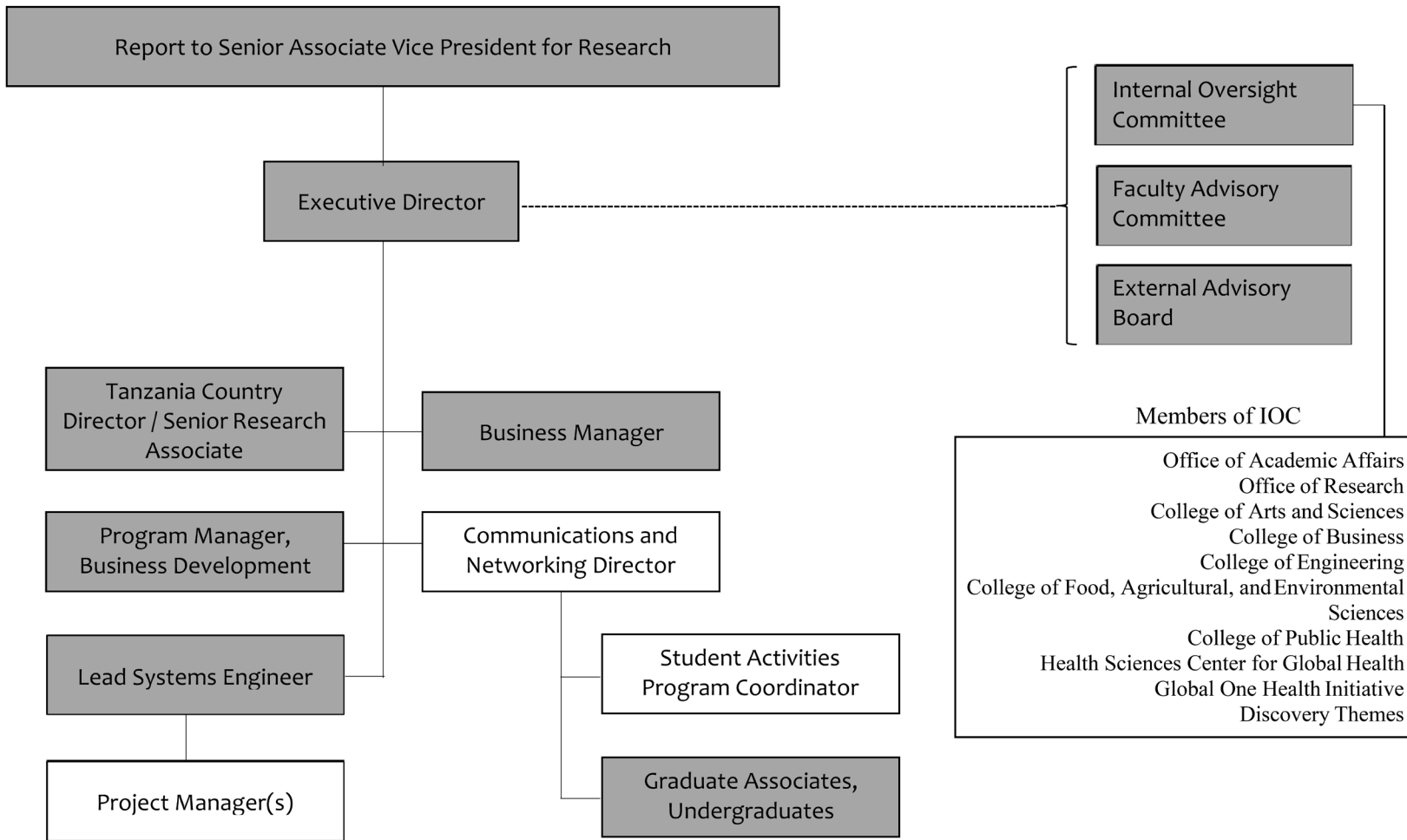
Discussions continue with the Global One Health Initiative (GOHI) regarding a cost share for an Administrative staffer – most likely a part time student. GWI invests \$25,000 a year in GOHI per its MOU with the Office of Research and Office of Academic Affairs.

GWI has two student interns this year: one from the College of Food, Agricultural and Environmental Sciences (CFAES) and one from Fisher College of Business (FCOB).

As GWI has evolved, two of its key staff are now funded by both direct and indirect funding. GWI would like to limit such indirect funding to no more than 50 percent of any staff member's cost unless the freed up funds enable the hiring of additional staff. If everybody is working on indirects, GWI does not have the capacity required for business development, proposal formulation, internal and external outreach.

Key to GWI's future plans are an assigned faculty member, half time coverage, to further extend GWI's research internally and externally. This requires full-funding of the GWI MOU with the Office of Research and the Office of Academic Affairs. GWI is also working to frame a succession plan for the Executive Director. These two activities could be interlinked and could be a portal for the reengagement of GWI in water issues related to the Great Lakes.





Gray boxes indicate positions currently filled.

Chart 1: GWI Organizational Model

## **Roles and Responsibilities for GWI Core Staff**

Each member of the GWI team was hand selected to make sure GWI had the full set of skills required to turn its systems solutions concept into a reality.

All members of the GWI team excel at business development and proposal formulation, and all are engaged in education activities at Ohio State be it Engineers Without Borders, Capstone Projects, GAP activities, faculty research projects, or guest lectures and presentation to faculty and students alike.

Key objectives in 2019 are to recruit and hire a new Director for Communications and Networking and to recruit a Senior Faculty Lead to support GWI.

Program Manager for Project Formation and Business Development – Amanda Davey

- Lead the GWI team in identifying viable funding opportunities, primarily focused on federal funding agencies
- Convene and lead teams of PIs across campus in proposal development and submissions aimed at furthering the GWI mission
- Co-manage the USAID Water Development Alliance project overseeing stakeholder management, sponsor liaison, contracting, budget tracking, reporting, and communications
- Support GWI internal networking, faculty, and student engagement, including serving as the Academic Advisor to the Ohio State Chapter of Engineer's Without Borders

Tanzania Country Director and Senior Research Associate – Rebecca Gianotti, Ph.D.

- Assist GWI Executive Director to set Tanzania-based programming: provide inputs on program structure, create technical content to guide program development, assist in creating of Scopes of Work for partners
- Establish and maintain relationships in Tanzania critical for the execution of GWI objectives and projects
- Develop priority research areas and activities related to GWI's objectives, create opportunities to engage OSU faculty, and enhance collaboration with in-country researchers
- Play a key role in writing proposals, business development and marketing to expand GWI's portfolio of activities, networks and branding

Lead Systems Engineer – Jeff Melaragno

- Develop systems solutions for global water problems, such as the Sustainable Village Water Systems Model
- Plan and manage projects including USAID WADA Project and GWI Pilot Projects
- Lead budget development for GWI external proposals and maintain cost documentation
- Lead GWI student activities including Capstones Projects

Director for Communications and Networking – TBD

- Develop internal and external communications strategy

- Direct efforts to increase faculty engagement – managing communications touchpoints to increase quality of interactions
- Key player in business development and proposal activities
- Interview, hire, train and evaluate professional and support staff – oversee GWI budget and expenses and provide monthly reports to GWI Executive Director

Executive Director – Marty Kress

- Provide strategic leadership and direction to fulfill the Institute’s role and to foster and promote a requirements based, systems oriented, solutions focused culture at Ohio State
- Lead efforts to identify key global issues and frame innovative solutions that leverage water-related research and outreach activities at Ohio State and other external organizations
- Interact with internal and external groups – from not for profits to international organizations to heads of government organizations – to build coalitions and attract key strategic partners
- Lead business development activities for GWI – works to provide for a diverse portfolio of funders including non-traditional funders – and to provide new research, project, and learning opportunities for OSU faculty and students.

## 4. PROJECT AND BUSINESS DEVELOPMENT

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*“OSU is focused on ensuring our best thinking crosses disciplines to have an impact on the world around us.”*

*Bruce McPheron  
Provost of The Ohio State University*

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### **Business Development Objectives**

From the beginning, the GWI Team had to work to gain identity for Ohio State in the water domain as “thought leader”, “systems solutions provider”, and a “neutral technology integrator”. Despite the number of faculty and researchers working in the water domain, GWI tried to bring Ohio State to the next level of external standing – as the partner of choice and solutions provider of choice for government and non-government organizations.

Over the last decade, there has been an ongoing debate at the federal and state level regarding the ability of universities to provide systems solutions to pressing problems. GWI worked in Ohio to address that issue by framing Field to Faucet, The Harmful Algal Bloom Research Institute, and the Ohio Federal Research Network. In turn GWI was engaged in 2017 and 2018 with the Ohio State Office of Government Affairs and the Glenn College to frame some new and innovative applied research programs for consideration by the next governor – programs that integrated key assets across the state of Ohio to solve problems confronting state officials, from algal blooms to controlling medical costs.

At the federal level, USAID had a five year pilot from 2012-2017 to assess the capabilities of research universities vis a vis complex global technical issues. That program just ended and the final report, “THE USAID HIGHER EDUCATION SOLUTIONS NETWORK”, has some interesting findings. Now GWI is engaging with the directors at USAID that are running the follow-on programs to the Higher Education Solutions Network, as well as with the university program leads for LASER, RTAC, STIP, and the Securing Water for Food Program. GWI’s goal is to position OSU as a key thought leader and implementer of systems solutions for pressing global issues, and to be a core member of the USAID team.

### **Proposal Formulation Strategy**

GWI has taken a multi-tier approach to its business development and proposal formulation activities.

First, assess systems concepts that are focused on the nexus of water, food, energy, hygiene and sanitation, do a failure modes analysis of current projects, do actual site visits to validate the research data, and then frame a solution model that represents sustainability for systems deployed in rural Africa. This is the foundation of the GWI Sustainable Village Water Systems Model and it has gained recognition for Ohio State.

Second, focus on projects and activities that will give GWI standing in the community, which was the rationale behind the two-year pursuit of a WADA Project with USAID. With this imprimatur, we knew we could secure more grants and gain external recognition.

### GW I 2018 Successes:

- *Singida Pilot Project launched to validate SVWS model*
- *USAID WADA Project launched to provide water to 120,000 people in Tanzania with matching grants from NFL, Coca-Cola, and WorldServe*
- *USAID GROWS Project Grant awarded to assess innovative private sector water services in East Africa*
- *Endorsement of new GWI-framed Infectious Disease Initiative by Government of Tanzania*
- *MPI Foundation Grant received to provide matching funds for USAID WADA Grant*
- *Global Villages, COE International, and Gateway Programs agreed to collaborate with GWI on student activities in Tanzania*
- *GW I invited to support Purdue University-led USAID LASER Grant – lead rural water activities with a focus on Africa*
- *WaterAid solicitation to donors to augment GWI WADA Grant with hygiene, sanitation and agricultural activities*
- *GW I secures Fulbright scholar from University of Dodoma (Tanzania) to come to OSU to support HIV/AIDS Research*

#### *Chart 2: GW I 2018 Successes*

Third, work to identify non-traditional funding opportunities linked to providing systems solutions. This was why GWI contracted with Geneva Global to identify the best candidate foundations for funding. Although the Geneva Global report was only completed a year ago, already the results have been quite impressive. Discussions are now underway with several foundations identified by Geneva Global.

Fourth, frame key strategic alliances to secure the full suite of capabilities needed to solve pressing issues – one would put GWI's relationships with GETF, Hecate Energy, WorldServe, WaterBoys, University of Dodoma, Government of Tanzania, World Bank, DFID, Oikos, WaterAid, etc into this category. It too has been most beneficial.

Fifth, frame agreements – innovative agreements that differentiate GWI from other providers of similar solutions. The GWI agreement with three ministries in Tanzania has opened door after door for us. Table 2 shows all the agreements that GWI has entered into with various governmental and non-governmental partners.



*Table 2: GWI External Agreements*

| <b>Name</b>   | <b>Type</b>            | <b>Partners</b>   | <b>Goals</b>   | <b>Exp. Date</b> |
|---|------------------------|---|--|------------------|
| Hecate Energy   | Teaming Agreement      | Hecate Energy<br>WorldServe Intl  | -Collaborate to secure funding to execute SVWS program<br>-Frame related business and process improvements and training needed   |                  |
| University of Dodoma, Tanzania  | LOI                    | University of Dodoma  | -Develop collaborative research and teaching programs at nexus of Food-Energy-Water-Health<br>-Joint educational activities<br>-Curriculum development<br>-Secure funding for capacity building  | 5/25/2019        |
| Catalytic Funding for a Common Cause                                  | Agreement to Cooperate | -Chris Long Foundation – Waterboys Initiative<br>-WorldServe International  | -Joint fundraising for SVWS in TZ to attract other external investors (National Football League)   | 9/21/2019        |
| Ministries of the United Republic of Tanzania                         | LOI                    | -Ministries of Water, Energy and Minerals, and<br>-Office for Regional Administration and Local Government                                | -OSU will frame and execute the SVWS in 125 pilot villages.<br>-Once complete, the Ministries will use the SVWS model for an additional 5,000 villages.  | 10/10/2019       |
| Singida Villages Project, Tanzania                                    | MOA                    | -WorldServe Intl.<br>-WaterAid TZ<br>-Global Partners for Development   | Deploy two Sustainable Village Water Systems in Singida, TZ<br>-Provide test bed for SVWS model<br>-Demonstrate parties can execute an integrated program  | 11/24/2020       |
| Food-Energy-Water-Health Nexus Teaming Agreement for SVWS in Tanzania | Teaming Agreement      | -WorldServe Intl/Majitech<br>-Chris Long Foundation<br>-Global Partners for Development<br>-WaterAid TZ<br>-Social Impact Inc.<br>-Simavi | -Working toward technological, economic, and workforce sustainable solutions with long-term value.<br>-Sourcing those solutions based on demonstrated quality, expertise, and end-user requirements.<br>-Collaborating to secure the funding required to execute the SVWS program.<br>-Framing the related business, process improvements, workforce development and training, and market mechanisms needed. | 9/19/2023        |

Sixth, be willing to ask for external assessments of proposed solution sets and differentiators. GWI’s review of its concept with the Global Sustainable Business Council was the key to creation of its EAB. GWI’s review with Price Waterhouse Coopers was the key to its receptivity at foundations and international organizations.

Seventh, be willing to take on complex proposals focused on systems solutions or new innovations. This differentiates GWI and helps it integrate more OSU faculty and students with its external partners.

Finally, be a catalyst that enables pre-tenure faculty to secure grants and research opportunities they might not be able to secure on their own.

In the GWI model, business development takes a step by step approach. Each step, small or large, provides the foundation for the next step. GWI uses its discretionary funds for faculty research and GAP and capstone projects as enabling investments for our next project or research activity.

## **GWI's Sustainable Village Water Systems Program**

The Sustainable Village Water System (SVWS) Program is GWI's flagship program in East Africa, arising from the Wells to Wellness focus area. This program was developed in response to a request from the Tanzanian Ministry of Water to assist with critical water system rehabilitation needs in the country, as well as GWI's own failure modes analysis of past water projects in Sub-Saharan Africa and the assessment process outlined above. The Tanzanian Ministry of Water has a need to serve the nearly 23 million rural residents suffering from 34,000 broken wells (40% of total; see Figure 1) and a requirement that new water and sanitation systems run on renewable energy.

The model uses solar power (energy) to produce clean water (water), which saves the village money that it can use to ensure the sustainability of the water system (using a private sector approach to water services) and expand its reach. Reliable access to clean water reduces the incidence of water-borne disease (health) and reduces the time spent finding and fetching water. As a result, both men and women have more time to grow crops and tend livestock (nutrition), children have more time to go to school (education), and women are able to spend more time on household care (hygiene and sanitation) and other activities (livelihoods).

Even small gains in family income can be re-invested in things that had to be put on the back burner before, such as improved sanitation, preventative medical care, or better farming equipment. If done right, providing for basic needs like water and energy can create an economic chain reaction that in turn helps to keep people healthier, more hopeful, and more self-reliant.

Tanzania is the pilot country for the Sustainable Village Water Systems Program (SVWSP). GWI has created an interdisciplinary, multi-sector implementation team by integrating complementary but not-often-paired needs. The team is united by a common dedication to systems solutions and galvanized by a challenge from the Tanzanian government: successfully implementing Sustainable Village Water Systems in 125 villages will trigger funding for an additional 5,000 villages—impacting a total of at least 5 million people. Three government ministries (Water; Energy and Minerals; and Regional Administration and Local Government) have signed an agreement to this effect with Ohio State.

The SVWS concept is illustrated in the figure below, which describes the core features in both English and Kiswahili.

# What's a Village Water System?

## Mfumo wa Maji Kijijini ni nini?

Programu ya Mifumo Endelevu ya Maji Kijijini nchini Tanzania

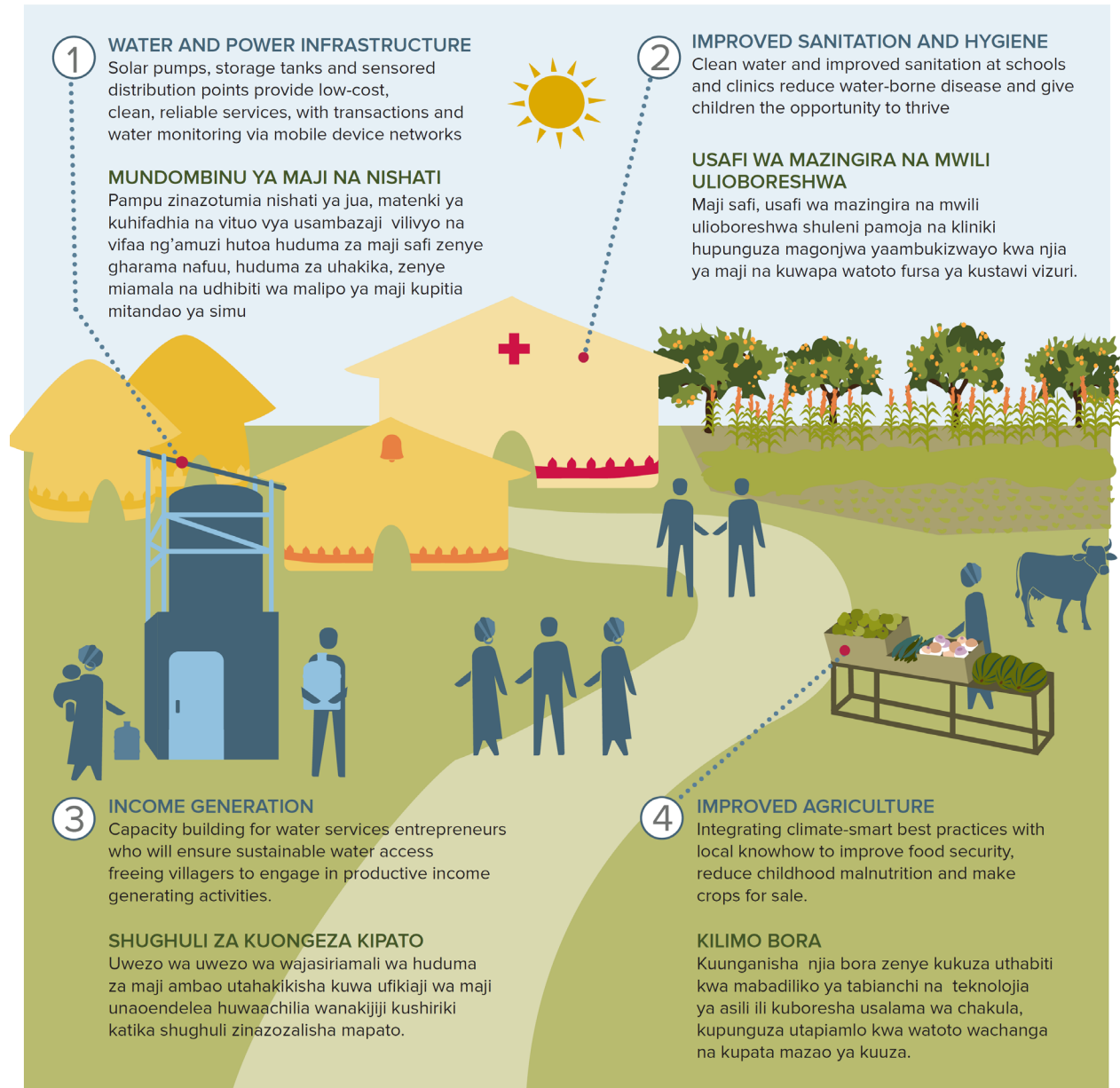


Figure 3: GWI's flagship program in East Africa: The Sustainable Village Water Systems Program (SVWSP).

The process to develop the concept for SVWSP, build the necessary relationships to implement it successfully in Tanzania, arrange the funding, and secure the agreements for implementation

took 3 years of actual projects and research activities for GWI. The pathway from concept to deployment and current achievements is outlined below.

2014:

- GWI initiates literature review and meets with water sector leaders
- GWI frames a concept for a sustainable systems approach to water
- GWI presents the SVWS concept to the World Business Council for Sustainable Development and Clinton Global Initiative at the invitation of Greif Industries

2015:

- The SVWS concept is endorsed and GWI initiates team building activities
- Tanzanian Minister for Water contacts GWI Executive Director and requests assistance in developing sustainable programs for water and food
- Government of Tanzania identifies 125 rural villages with critical needs
- GWI facilitates the signing of an agreement between OSU and three Tanzanian government ministries to secure funding and deploy water services to those 125 villages
- GWI targets implementation experts in Tanzania and builds relationships to put agreements to collaborate in place
- GWI asks PriceWaterhouseCoopers to provide an external review of its concepts and receives positive feedback about its systems approach being a key differentiator

2016:

- GWI funds initial site assessments of 45 villages, executed by in-country partner Majitech Engineering, to provide an up-close look at non-functional water points
- GWI begins engagement with USAID's Water and Development Alliance proposal process
- GWI uses its MacArthur Foundation grant application to better define the SVWS concept and the implementing partnership team

2017:

- GWI finalizes SVWS Pilot Project concept for two villages in Singida region of Tanzania
- GWI secures matching funds from 4 of its key partners (WaterBoys, WorldServe, Global Partners for Development and WaterAid) and approval from the Ministry of Water
- SVWS Pilot project in Singida region launches in November

2018:

- New boreholes are drilled in both pilot villages for construction of new solar-powered water systems
- Both village councils and district water engineers agree to a standard of service contract for the private operator model to be used for SVWS projects
- Agricultural training provided through GWI's SVWS partners yields the first-ever dry season vegetable harvests in the pilot villages
- USAID WADA project approval.



*Figure 4: Majitech Engineering drilling a new borehole at Mughanga village, Tanzania, as part of GWI's Sustainable Village Water Systems pilot project in Singida. Image credit: Rebecca Gianotti.*

## **Water and Development Alliance Project**

The Water and Development Alliance (WADA) project builds on the groundwork that GWI laid beginning in 2014 to address the problem of approximately 120,000 Tanzanians in 36 rural communities lacking sustainable, reliable access to clean water. Working with its partners WorldServe International, the WaterBoys and Global Partners for Development, GWI spent over 2 years developing relationships and working with USAID to secure funding for this work. The pathway to the WADA grant was:

*Step 1: EAB member introduces GWI to USAID official*

*Step 2: FAC member introduces GWI to Coca-Cola official*

*Step 3: GWI is introduced to Global Environmental Technology Foundation (GETF) – the manager of all WADA projects for USAID*

*Step 4: Meetings with partners, USAID, Coca-Cola and GETF take place in the US and Tanzania over many months to solidify the implementation team and frame the necessary agreements*

*Step 5: GWI is introduced to the US Mission in Tanzania*

*Step 6: The SVWS Model gains support through further meetings and relationship-building*

*Step 7: GWI's champion at USAID attends a WaterBoys fundraising event – funding is identified*

*Step 8: GWI is asked to submit a concept paper to WADA, a pre-proposal, and a full proposal*

*Step 9: Subcontract is awarded to GWI*

*Step 10: WADA project launches June 2018*

Awarding of the WADA grant is not only important for providing reliable clean water systems to 120,000 people who desperately need it. It also is a crucial validation of GWI's SVWS model,



and builds recognition for OSU and GWI in Tanzania and East Africa. With funding in place for the water services component of the SVWS model in 36 villages, WaterAid Tanzania and WaterAid USA have committed to collaborate with GWI on fundraising activities to secure the funds needed to complete the SVWS program in all 36 villages – adding hygiene, sanitation and agricultural activities in each WADA village.

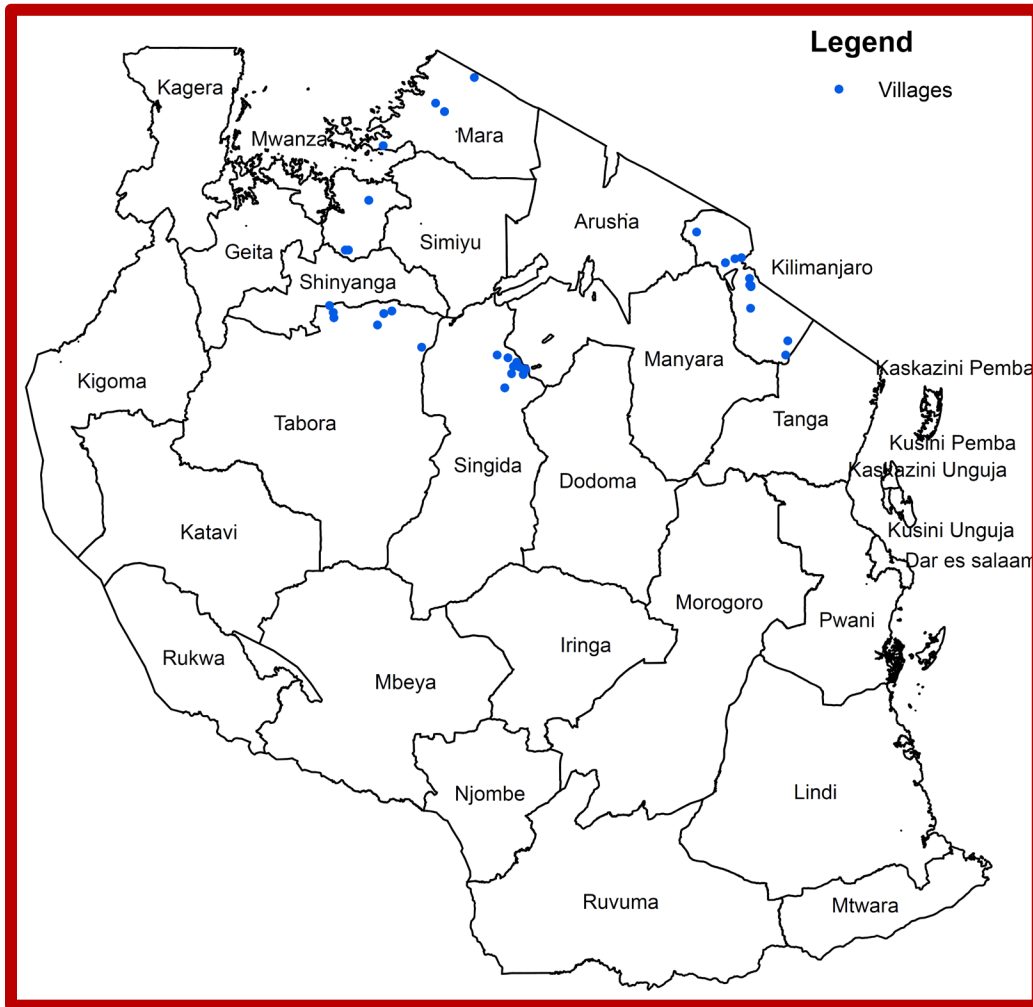


Figure 5: Villages in the WADA project (shown in blue), across 6 regions of Tanzania.

The private operator model that GWI is employing in the SVWS pilot villages will be replicated in the 36 WADA villages, bringing the model to scale. In addition, the NGO Oikos has used GWI’s private operator contract as the basis for a 32-village project it is undertaking with funding from the World Bank in Singida region of Tanzania. This is a resounding endorsement of the business model developed by GWI for the SVWSP and will result in a cluster concept for rural water services in central Tanzania that include 51 villages and will provide water to 150,000 people.

GWI is now holding meetings with foundations in East Africa to further augment the funding needed to bring the SVWS Model to scale and build on the WADA project. In January 2019,

GWI will approach a major external partner to bring the number of sustainable water systems to 125 as per OSU's agreement with the Government of Tanzania.



*Figure 6: A community water tap in Msange village, Tanzania, where the WADA project will bring additional distribution points and more reliable service. Image credit: Rebecca Gianotti.*

## **Proposal Activities in Support of GWI Partner Organizations**

In addition to securing funds for OSU, GWI also works to help its partner organizations secure funds for projects directly linked to the GWI mission or contract commitments. For example, GWI framed the recently funded MPI Foundation proposal for WorldServe and WaterBoys to help secure funds to be applied to their \$1M match for the USAID WADA Project.

GWI also framed proposals for the Dewji Foundation in Tanzania and the KenGen Foundation in Kenya that would support the deployment of more Sustainable Village Water Systems (SVWSs). Those funds have to go to an in-country not for profit partner per the foundations' operating procedures. So although funds will not flow to GWI, water will flow to more and more people and two of the major foundations in East Africa will have endorsed GWI's SVWS model. As depicted in Chart 3, a lot has happened at GWI in FY2018 and the forecast is for even more to occur in FY19.

# Key GWI Events for FY18

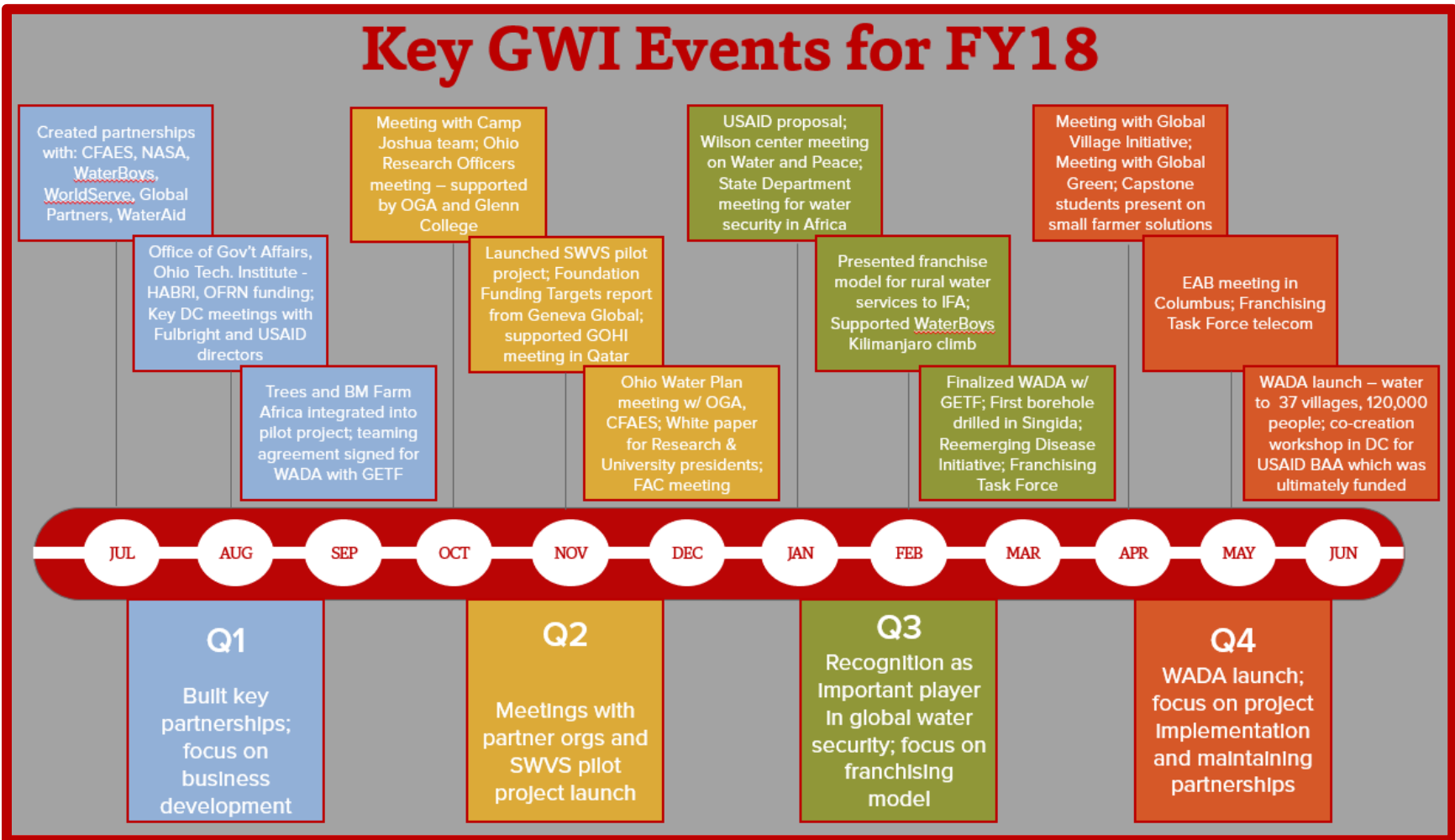


Chart 3: Key GWI Events for FY18

## 5. GWI PARTNER ORGANIZATIONS

### Key Partner Organizations – Nature of Interactions

In Section 4, GWI has highlighted the agreements that serve as the foundation of its external collaborations and its collaborations with other organizations on campus. So central are GWI partner organizations to the GWI Model, the GWI Team felt compelled to highlight these partners and the capabilities they bring to the Team, our projects, and activities.

### Fundraising

WorldServe International and the Chris Long Foundation's WaterBoys initiative bring exceptional fundraising capabilities to our projects and activities – both in support of GWI and as a complement to GWI.

In particular, WorldServe and WaterBoys are providing a \$1M match for our USAID-funded WADA Project. In parallel, the WaterBoys have funded over 50 wells in Tanzania in the last 18 months, providing water to nearly 175,000 people, and WorldServe has deployed over 150 solar powered wells in the last 3 years, impacting nearly 500,000 people. WorldServe estimates it has now provided water to more than 2 million people in Tanzania and the WaterBoys just announced they are committed to provide water to 1 million people.

In addition, these two entities were key to getting the NBA to fund wells in Tanzania via Hoops 2 O and they have been critical to securing interest with the PGA and other potential funding and/or partner organizations. They also serve as advocates and champions for GWI and Ohio State by actively promoting our SVWS model, our innovative private sector operator and pricing concept, and our franchising model. Every time GWI attends a WaterBoys or WorldServe event, it secures new leads.

In January, we hope to take our model to the next level as we meet with a global entity to gain their support.

### Networking and Communications

Every partner of the GWI Team (see logos below) and every member of the EAB is engaged in networking on behalf of GWI

Our initial entry into water projects in Tanzania was influenced by the connections of an EAB Member, as was our initial set of meetings with the University of Dodoma. In turn, the Minister of Water and Hecate introduced GWI to WorldServe, who is now engaged in the day-to-day execution of our WADA and SVWS Pilot Projects through their in-country engineering firm, Majitech Engineering. The WaterBoys and WorldServe not only generate funding, they capture the public's attention and help us network with groups in-country and in the US that have been key to our success.



One of our funders for the matching grant with USAID, MPI Foundation, has been introducing GWI to emerging technology firms and other foundations, as has the World Bank, UK's Department for International Development (DFID; a member of the EAB), and NGO Oikos.

It was because of our relationship with the World Bank in D.C. and the Regional Water Engineer for Singida, Tanzania, that GWI was engaged in the cluster project in Singida with the World Bank, the Tanzanian Ministry of Water, and Oikos. Our interactions with the Mandela Fellows on campus at OSU led to our collaboration with BM Farm Africa, a new not-for-profit in Tanzania helping to execute our SVWS pilot project. And we were able to frame our new infectious disease initiative through our partnership with WaterAid and connections to the Abbott Fund in Tanzania.

Rabobank, another member of GWI's EAB, has been instrumental in introducing GWI to key foundations, not-for-profits and firms. Rabobank secured the meetings GWI had early on with the Clinton Foundation and they are now working to link us up with foundations highlighted in the Geneva Global Report.

Finally, MSA, Coca Cola and Wendy's representatives on the EAB have been central to our franchising initiative and establishing connections with social impact investors and the International Franchising Association. Our relationship with GETF has been instrumental in introducing GWI to USAID and the Department of State.

As good as are the communications/networking skills of Ohio State, GWI's external partners and networks greatly extend our reach to key audiences. For example, every year the WaterBoys team up with Wounded Warriors and climb Mt. Kilimanjaro to raise money to install wells and to increase public awareness. Last year the NFL Film Team joined the climb and a one-hour special is soon to hit the street. That will give more attention to what we do than any press release, as will the fact that Chris Long, founder of the WaterBoys, has been nominated by the Philadelphia Eagles this year for the Walter Payton Award for Humanitarian Activities.

## Project Formulation and Execution

The GWI model depends on an ability to integrate the local assets (people and resources) required to frame and execute a project. Ohio State offers a rich portfolio of assets, but capitalizing on proven, in-country assets is a key element of the GWI risk mitigation plan. Towards that end, GWI has intimately engaged its partner organizations in framing and executing its Pilot and WADA projects, and it works closely with GETF to fully comply with USAID requirements.

WorldServe's subsidiary in East Africa, Majitech Engineering, is our in-country project manager for both the SVWS Pilot and WADA projects. Majitech is a best of class installer of solar powered wells and an expert in village consensus building. WaterAid has global and in-country standing and is the architect of the Government of Tanzania's National Sanitation Plan. BM Farm Africa and Trees For the Future, our agricultural partners on the SVWS Pilot, bring unique capabilities in agronomy and agricultural extension to the team and provide face to face support to the Farmer Field Groups they have created for our projects.



The World Bank, Oikos, DFID, Tanzanian Private Sector Foundation, and University of Dodoma bring much needed business acumen to the table. Our partners in the national government agencies bring requirements, priority needs, and the much needed connectivity to district and regional authorities and village leadership.



*Figure 7: Cows rush to the freshly tapped water supply in Ghalunyangu village following water pump installation in November 2018. Image credit: Scott Shearer.*

## Student and Faculty Research Opportunities

Our first partner organization in Tanzania was the University of Dodoma (UDOM) and that factor is always part of our opportunity assessments. To date, with UDOM's support and that of our other partners and the US Mission in Dar es Salaam, as well as OIA, we have secured two Fulbright scholars – one from UDOM to OSU, and one from OSU to UDOM.

We are now finalizing plans for the first ever business plan competition at UDOM with support from FCOB. The judges for this competition will be drawn from our partner organizations and Tanzanian network – World Bank, DFID, Coca Cola, and the Tanzanian Private Sector Foundation. The plan for this competition was created by faculty and MBA students at OSU with support from faculty at UDOM.

Our in-country partners not only implement the projects that bring real benefits to Tanzanian communities, they are also critical for supporting research by OSU faculty. The WADA award includes a funded hydrogeology project led by PI Audrey Sawyer (School of Earth Sciences, ASC). Majitech is collecting soil, rock and groundwater samples to be shipped to OSU for analysis by PI Sawyer and her students for this project. This research has great support from the Tanzanian Ministry of Water and was recently showcased at a groundwater workshop in Tanzania.

BM Farm Africa, in addition to carrying out agricultural training and creating farmer groups in our SVWS pilot project, is assisting GWI and PI Mary Rodriguez (Department of ACEL, CFAES) with a project to provide agricultural extension training for subsistence farmers in central Tanzania. WaterAid's collaborative fundraising efforts with GWI will not only raise money to execute hygiene, sanitation and agricultural activities in our WADA villages, but will provide funding for critical agricultural research in Tanzania to be led by OSU faculty.

In a recent meeting with the Dewji Foundation, GWI was asked if OSU would be willing to provide interns to the Dewji Foundation during the summer months. Needless to say, this would be a unique and powerful opportunity for OSU students. This meeting was made possible by WorldServe and GWI's connections in Tanzania. GWI is now working closely with the Foundation to secure funding for future projects.

DFID and the Nelson Mandela African Institute of Science and Technology in Tanzania are now interacting with GWI to discuss creating a new requirements-based workforce development program at the Mandela Institute. The foundation would be based on GWI's SVWS model but it would also capitalize on OSU's on-line courses and remote education capabilities.

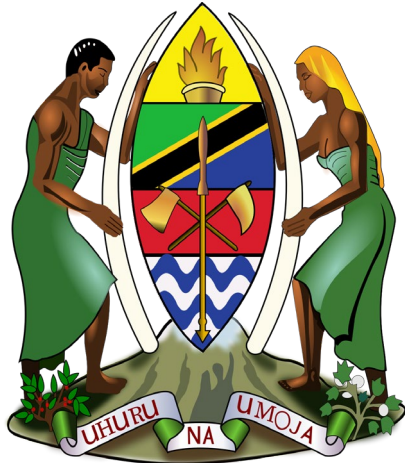
GWI has created a network of partners and relationships across the US and East Africa that is truly impressive. These relationships were built from the ground up – establishing initial contact, developing trust and mutual respect over time, and culminating with productive collaborations on the ground.

The breadth and depth of GWI's network garners respect and attention from other actors in the water, research and community development sectors, and is absolutely essential for achieving GWI's project objectives in country:

- Understanding the real needs facing rural communities in East Africa, as well as the resources and limitations of current efforts to address those needs;
- Developing and executing requirements-driven research projects and programs with OSU researchers and local collaborators in-country;
- Creating and executing projects that address the critical needs of rural communities, with local, experienced implementing partners leading the work and with full cooperation and support from local governmental authorities; and
- Building the capacity of local implementers, training / educational institutions and governments to undertake this critical work in the long-term.

In effect, the GWI Partner Organization works in a manner similar to the GWI Team – each of us has our core responsibilities but we share mutual goals and activities, such as student engagement, research, networking, and communications that helps us tell our story, bolster our activities, and expand our reach. There are nearly 800 million people in Sub-Saharan Africa without access to water. There is much work to do and the more partners we have and the greater our networks, the better our chances of success.

Chart 4: Logos of GWI Partner Organizations



Government of Tanzania





## 6. FACULTY ENGAGEMENT

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*“The greatest impediment to exploration, discovery and innovation is the illusion of knowledge.”*

*Daniel Boorstin  
Librarian of Congress*

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GWI is continually expanding its faculty engagement and interactions. Central to GWI’s faculty engagement strategy are its Faculty Advisory Committee, GWI-provided research grants, project/research grant-funded faculty engagement, proposal support and matching funds, seminars and information exchanges.

### Core Faculty – Faculty Advisory Committee

At the heart of GWI is its Faculty Advisory Committee (FAC). The FAC was intentionally built to include tenured and non-tenured faculty, unit leaders, key Ohio State Center and Institute leads. Seven different colleges actively participate on the GWI FAC. Dr. Berry Lyons, School of Earth Sciences, College of Arts and Sciences, serves as the Chair of the GWI FAC. As evidenced by the members list below, GWI went to key thought leaders on campus. Current members are:

|   |  |   |
|---|--|---|
| <p><b>Arts and Sciences</b><br/>Berry Lyons<br/>Mark Moritz<br/>Audrey Sawyer</p> | <p><b>Engineering</b><br/>Steve Ringel<sup>1</sup><br/>Linda Weavers</p> | <p><b>Food, Agricultural and Environmental Sciences</b><br/>Sathya Gopalakrishnan<br/>Elena Irwin<sup>2</sup><br/>Scott Shearer</p> |
| <p><b>Business</b><br/>Michael Camp<br/>Keely Croxton</p>                         | <p><b>Medicine</b><br/>Diane Gorgas<sup>3</sup></p>                      | <p><b>Public Health</b><br/>Michael Bisesi<br/>Jiyoung Lee (joint appt, FAES)</p>   |
| <p><b>Veterinary Medicine</b><br/>Wondwossen Gebreyes<sup>4</sup></p>             | <p><b>Office of Energy and Environment</b><br/>Kate Bartter</p>          | <p><b>Ohio Sea Grant</b><br/>Christopher Winslow</p>  |

<sup>1</sup> Also represents Materials and Manufacturing for Sustainability (M&MS) Discovery Theme  
<sup>2</sup> Also represents Sustainable and Resilient Economy (SRE) Discovery Theme  
<sup>3</sup> Also represents College of Medicine’s Office of Global Health  
<sup>4</sup> Also represents One Health Program

During the course of the year this group has:

- helped develop key concepts and proposals for research, teaching and outreach – e.g. the new infectious disease initiative and the new Global Applied Project at FCOB

- introduced us to new Discovery Theme hires and Ohio State Faculty engaged in our core research areas
- supported our meetings and key activities with international partners, corporate players, visiting government and university officials, and other OSU faculty
- supported our first ever joint External Advisory – Faculty Advisory Meeting
- helped frame and execute our core educational activities from helping to identify key topics for capstone projects to helping us select graduate assistants
- supported a broad array of proposal activities that included both GWI and faculty framed proposals activities, e.g. pre-proposal for an ERC and new USAID proposal for innovative private sector water services
- assessed a proposed concept paper for new statewide institutes aimed at solutions oriented applied research – drafted for ODHE, university SVPs and presidents
- helped us assess and frame new collaborative initiatives across Centers and Institutes – such as the new Infectious Disease Project in Tanzania and a proposed measurement and evaluation of current nutrient reduction practices in the Western Lake Erie Basin.
- Introduced us to OSU faculty and staff with interests in GWI activities for inclusion in our research, student engagement, and proposal activities.
- Helped us assess a strategy and options for the future evolution of GWI and frame a compelling GWI Value Proposition.

As importantly, the FAC provides GWI with access to a mix of Ohio State centers, institutes and faculty, and enables collaborations on projects and proposals, be it the new Infectious Disease Concept or NSF pre-proposals for Engineering Research Centers.

## **GWJ Research Grants**

When GWI was established, it was decided that focused, requirements-driven research grants in the \$10-\$25,000 range would generate the greatest benefit in terms of generating research outputs and products that can be directly applied to GWI projects. It also better positions Ohio State faculty for externally-funded awards. Based on our success to date with our USAID proposals, this model has been validated. It has also allowed GWI to support pre-tenure faculty and to position them for external awards, as well as augment our proposal content.

*Table 3: GWI Faculty Research Grants*

| <b>Faculty PI – Project (Academic Unit) for GWI-funded Research</b> | <b>Grant Amount</b> |
|---|---------------------|
| Keely Croxton – Tanzania Water Business Model (FCOB)                | \$23,000            |
| Audrey Sawyer – Tanzania Hydrology Research (ASC)                   | \$22,000            |
| Diane Gorgas – One Health Neonatal Training in Tanzania (COM)       | \$25,000            |
| Scott Shearer – Global Village Initiative (CFAES)                   | \$25,000            |
| Wondwossen Gebreyes – Global One Health Initiative (OIA)            | \$25,000            |
| CK Shum – Hydrology Remote Sensing (ASC)                            | \$25,000            |
| Nick Breyfogle – History of Water Film (ASC)                        | \$3,000             |
| Mary Rodriguez – InFACT Grant Match (CFAES)                         | \$25,000            |
| <b>TOTAL FACULTY RESEARCH GRANTS</b>                                | <b>\$173,000</b>    |



Several of the projects enabled by these research grants are conducted with strong support from GWI’s collaborators in Tanzania, and have been critical for strengthening Ohio State’s presence and brand in that country.

| <b>OSU Faculty and GWI Collaborations</b>  |  |
|--|--|
| <p><b><u>Dr. Audrey Sawyer</u></b><br/>Hydrogeology research with Tanzanian Ministry of Water – led to USAID grant for groundwater sustainability assessment and mapping</p> | <p><b><u>Dr. Diane Gorgas</u></b><br/>Neonatal survival training program for nurses funded by GWI and Grief Industries – helped in formulating Infectious Disease Initiative</p> |
| <p><b><u>Dr. Keely Croxton</u></b><br/>Franchising concept and business model for rural water services in Tanzania funded by GWI and FCOB</p>                                | <p><b><u>Dr. Mary Rodriguez</u></b><br/>Mobile phone ag extension services in collaboration with UDOM, funded by GWI and supported by Tanzanian Ag offices</p>                   |

Dr. Croxton’s work also provides a valuable linkage to the Sustainable and Resilient Economy Discovery Theme (for which she is part of the leadership team).

GWI’s research investments are also a critical element of GWI’s 2018-19 strategy.

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*“The hard work of the GWI team continues to lead to the engagement of faculty, staff and students from all around the Campus. GWI’s work addresses important global water issues, and helps promote ‘hydrophilanthropy’.”*

*W. Berry Lyons  
Co-Chair, GWI Faculty Advisory Committee  
University Distinguished Scholar, School of Earth Sciences*

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## **Project Research Funding**

Both of the recently awarded GWI grants from USAID include research funds for faculty at Ohio State.

The Water and Development Alliance Grant included \$100,000 in funding for Dr. Audrey Sawyer to further expand her work on investigating groundwater sustainability and fluoride-

focused water quality mapping in Tanzania. ASC also received \$99,000 in F&A through this award.

The newly awarded USAID Governance and Private Sector Water Services grant provides \$844,000 to Ohio State, including \$279,000 in F&A (split between ASC and CFAES), salary and fringe to Dr. Amanda Robinson in ASC and Dr. Mary Rodriguez in CFAES as research co-leads, as well as salary and tuition for two graduate students for two years.

Now pending is a major research grant being sought in collaboration with WaterAid that would provide \$2.5 million to GWI for agricultural extension activities, including \$650,000 for Ohio State-led agricultural research and \$75,000 in F&A to CFAES. The research will be focused on critical food security issues in East Africa. GWI would also manage over \$1.8M in subcontracts to key agricultural organizations in Tanzania.

*Table 4: GWI proposal activities*

| Title   | Source of Funds  | PI                                 | Date      | Outcome | External Funding |
|---|--|------------------------------------|-----------|---------|------------------|
| Water and Development Alliance (WADA) Tanzania Entrepreneurship for Resilient Village Water Systems | USAID / Coca-Cola, co-funded by WorldServe / WaterBoys | Marty Kress (Co-PI: Scott Shearer) | 4/5/2018  | Funded  | \$2,025,000      |
| Sustainable Village Water Systems (SVWS)  | WaterAid   | Rebecca Gianotti                   | 8/28/2018 | Pending | \$2,529,840      |
| Sustainable Water Services in East Africa   | Microboard Processing Inc. Foundation                  | Marty Kress                        | 9/1/2018  | Funded  | \$325,000        |
| Governance Research on Water Systems (GROWS)  | USAID  | Rebecca Gianotti                   | 9/20/2018 | Funded  | \$1,974,000      |

As GWI continues to evolve, such grants will grow and engage an even broader cross section of Ohio State colleges, faculty and students.

During 2017-18, GWI also played a key role in collaborating with the Office of Government Affairs to secure \$2M in funding for the Harmful Algal Bloom Research Initiative. These funds underwrote grants at nine Ohio research universities, including Ohio State. Over five years, \$9.5M was invested in HABS research.

### **Proposal Support and Matching Funds**

In addition to providing focused research grants to faculty (as described above), GWI supported a range of faculty proposals with matching grants during 2017-2018.

The \$25,000 research grant provided to Dr. Mary Rodriguez (CFAES) was a match to funds Dr. Rodriguez received from an InFACT award. This successful InFACT proposal was co-developed and co-written by GWI staff member Rebecca Gianotti. The work builds on GWI's collaboration with the University of Dodoma in Tanzania and leverages relationships that GWI has built with partners in Singida region of Tanzania, particularly around agriculture.

In addition to the \$25,000 provided to Dr. CK Shum (ASC) as a research grant, GWI provided \$25,000 in matching funding to Dr. Shum to support a 2017 Cooperative Institute of Limnology and Ecosystems Research (CILER) proposal for postdoctoral research focused on Great Lakes water issues, which was successfully funded in 2018.

GWI provided matching funds to the Global Villages Initiative led by Dr. Scott Shearer (Chair of Food, Agricultural and Biological Engineering in CFAES). This enabled Dr. Shearer to establish a collaboration between CFAES, the Humanitarian Engineering Program in the College of Engineering and GWI, and secure additional internal Ohio State funding to build the proposed Global Villages Student Program.

## **Seminars and Information Exchanges**

GWI actively supports seminars and information exchanges held by other Ohio State organizations, from OEE to Humanitarian Engineering, the Center for African Studies to Sustainable and Resilient Economy Discovery Theme, the Sustainable and Resilient Tanzanian Communities program, to the Mershon Center, the Mandela Fellows Program to the Glenn College/IDI Scope Program, the Global One Health Annual Meeting to the ASC annual lecture series, the FCOB entrepreneurship and innovation seminars to student business plan presentations and evaluations, the Environmental Sciences Network to the Office of Research Annual Research Day events.

GWI works hard to network and to be engaged in activities where it can add value or gain value. In 2017-18, GWI also took the lead in putting two major events in place: Voices from the Field and Did You Know.

**GWI Voices from the Field (VFTF)** was a weekly brown bag speaker series organized in conjunction with the Center for African Studies. The purpose of the informal lunchtime forum was to highlight the work of Ohio State faculty with experience working in Africa. The series ran for three semesters from spring 2017 through spring 2018, and included 22 faculty, 330 students, and 14 departments across campus.



*Figure 8: Dr. Bakalo Gumi presents at a Voices from the Field event in December, 2017. Image credit: GWI.*

*Table 5: Voices from the Field Presenters*

| <b>Name</b>     | <b>Dept./School/Division/Center</b>        | <b>College</b> | <b>Title</b>  |
|-----------------|--|----------------|---|
| Maria Belu      | Vet Med                                    | CFAES          | Veterinary Data Collection in Ethiopia  |
| Leah Bevis      | Ag., Env. And Developmental Economics      | CFAES          | Household Surveys for Interdisciplinary Research: Challenges of Multidimensional Data Collection                            |
| Joe Campbell    | Environment and Natural Resources          | CFAES          | The Sustainable and Resilient Tanzania Community Program  |
| Sam Clark       | Sociology                                  | CAS            | Health And Demographic Surveillance In Africa: Experiences From The Last 25 Years   |
| Richard Dick    | Environment and Natural Resources          | CFAES          | Culture, Agriculture And Shrubs: Improving Soils and Crop Yield in West Africa  |
| Rebecca Garabed | Vet Med                                    | CFAES          | Stuck Between Two Extremes: Trying to Find Solutions That Work in the Field and in the Lab                                  |
| Suzanne Gray    | Environment and Natural Resources          | CFAES          | Linking Water Quality with Aquatic Biodiversity in Rural Ugandan Communities  |
| Rudy Hightower  | Glenn College of Public Affairs            | CAS            | Building Capacity in Systems Dynamics in Africa: the Mandela Washington Fellowship Experience                               |
| Nicole Kraft    | Communications                             | CAS            | Online Teaching and Learning in Ethiopia  |
| Sally Miller    | Plant Pathology                            | OARDC          | Developing integrated strategies to manage diseases of vegetable crops in Tanzania, Kenya and Ethiopia                      |
| Mario Miranda   | Ag., Env. and Developmental Economics      | CFAES          | Promoting Technical Transformation and Financial Inclusion among Smallholder Farmers in Africa                              |
| Fungisai Musoni | African and African Studies                | CAS            | Measuring the Substantive Representation of Zimbabwean Women's Issues in the National Legislature                           |
| Ann O'Connell   | EHE  | CAS            | Strengthening Research Methodology and Data Analysis Capacity in Higher-Education in Ethiopia: Challenges and Opportunities |
| Sui Phang       | Evolution, Ecology, and Organismal Biology | CAS            | Cooperation and Collaboration to Meet Challenges of Research in a 'No-Go' Zone  |
| Jan Pierskalla  | Political Science                          | CAS            | Re-Constructing the Colonial State: Experiences with Archival Field Research in Namibia                                     |
| Amanda Robinson | Political Science                          | CAS            | From Focus Groups to Field Experiments: A Decade of Data Collection in Malawi   |
| Mary Rodriguez  | Ag. Comm., Education, and Leadership       | CFAES          | Africa series speaker, exploring collaboration  |

| Name             | Dept./School/Division/Center | College | Title   |
|------------------|------------------------------|---------|---|
| Audrey Sawyer    | Earth Sciences               | CAS     | Between A Rock and A Hard Place: Surveys Of Groundwater Resources In Rural Tanzania                           |
| Marcel Yotebieng | Public Health                | CPH     | Elimination of Mother-to-child Transmission of HIV: Using Data in Real Time to Help Close the Gap in DR Congo |
| Shu-Hua Wang     | Dept. of Internal Medicine   | COM     | Tuberculosis Research in Humans and Cattle in Ethiopia  |

The idea for VFTF was sparked when Ohio State hosted Mandela Fellows in 2016 and 2017. It should be noted, GWI has continued to work with these Mandela Fellows to vet its concepts, sustainable village water systems and infectious disease, and to help with key introductions in their home countries. GWI is fully committed to work with OAI, the Glenn College, the Mershon Center and CAS to host future cadres of Mandela Fellows.

**DID YOU KNOW** was a GWI initiative that was intended to better inform faculty and students about the range of activities taking place in Tanzania, to enable more faculty collaborations, and to better integrate OSU capabilities into GWI proposals. The event was so successful that planning is already underway for an East Africa Did You Know Session in the Spring.

GWI also intends in the near term to film some of the key presenters and to put those presentations on its web page – they tell most meaningful stories.

As noted in the program flyer below, 13 different speakers from seven colleges and GWI gave short overviews of a broad range of activities. More importantly, some of the key activities highlighted were funded directly by the Ohio State faculty and staff or they had secured a grant from an industry partner to support their activities. GWI research grants were also part of the presentations as were newly awarded GWI government grants.

For sure, every presenter was quite proud of their activities and one group had their partner in Tanzania present with them. As depicted in the picture below, the engaged faculty are proud of what they do – and where they work.

It was the Did U Know Session that acted as the catalyst for the new student-faculty initiatives in collaboration with COE, Global Gateways, and Global Village. This event also acted as a catalyst for more collaborative research activities that are now being framed between GWI and the COE.



**Did You Know – GWI is Proud to Present an  
Overview of Ohio State Activities in Tanzania**

What Our Collective Community is Doing to Make Ohio State  
THE LAND GRANT UNIVERSITY OF THE FUTURE

**Tuesday, September 18<sup>th</sup>, 3:00 – 5:00 p.m.**

**Program**

**Introductory Remarks**

Berry Lyons, ASC – Chair, GWI FAC

Ian Reece – Chair, GWI EAB

**Speakers – 4 minutes each\***

Robin Chenoweth, CEHE and Tricia Allenby, COM – Camp Joshua Initiative

Happiness Wambura – Camp Joshua and Camp Moses Orphanages

Scott Shearer, CFAES – Humanitarian Development and Innovation

Jane Fife, CFAES and Don Hempson, COE/OIA – New Capstone Initiative

Michael Hagenberger, COE – Marwa Village Project

Audrey Sawyer, ASC – Hydrogeology Research

CK Shum, ASC – Remote Sensing with Water Resources

Amanda Davey, OOR – New USAID Coca Cola Project SVWS Program

Bec Gianotti, OOR – WaterAid Initiative Capitalizes on GWI Pilot Project

Keely Croxton, FCOB – Water Services Franchising

Diane Gorgas, COM – Neonatal Training

Sanja Ilic, CEHE – Food Safety for At Risk People

Mary Rodriguez, CFAES – Hand Held Ag Extension Network

\*The floor will be open for questions after all speakers have presented.

*Reception in hallway following presentations.*



**THE OHIO STATE UNIVERSITY**

GLOBAL WATER INSTITUTE

## **Affiliated Faculty**

In addition to those faculty who serve on the GWI FAC, conduct research with GWI grants, or are PIs or co-PIs on project and research grants, GWI interacts on a regular basis with the faculty leads and staff directors for the Discovery Themes and other core programs at Ohio State such as Humanitarian Engineering, Engineers Without Border, Capstones and GAP programs.

In many ways, GWI looks and feels like a Discovery Theme so framing interdisciplinary projects with DTs is a logical pathway

GWI had intended to solicit faculty members in 2018 to become Affiliated GWI Faculty. But our staff member responsible for that activity took a new position at OSU. Once we have filled the slot for Director of Communications and Networking, we will resume the Affiliated Faculty process.

Below is the plan for Affiliated Faculty as outlined in the GWI Strategic Plan.

**Affiliation with GWI is open to all faculty and researchers who have:**

- An interest in issues that relate to water quantity, quality and access, which include interconnected issues of food production, health, land use sustainability, energy, and economic development;
- A drive to engage in solutions-oriented research motivated by the requirements of end users and fueled by partnerships with industry, NGOs and academic partners;
- A commitment to systems-based problem solving;
- A desire to participate in a collaborative, multidisciplinary intellectual community that requires close cooperation, data sharing and trans-disciplinary communication to achieve goals; and
- An interest in providing students with outstanding experiences both in the classroom and in the field.

When needed, GWI may also utilize a Request for Information or Request for Proposals as the mechanism for building research and project teams. When it was framing HABRI, GWI capitalized on the existing Ohio Sea Grant Program proposal process to handle the evaluation of faculty research concepts and to oversee project management for research work focused on algal blooms. The Sea Grant process is user-friendly, streamlined, available to users from multiple organizations (not just Ohio State), transparent and flows easily into project monitoring and reporting.

A list of the faculty that GWI has engaged within its three key focus areas is included as Appendix D. These faculty were all part of the original GWI Institute Proposal.

A key theme for GWI during the last year was the integration of the capabilities, faculty and staff of its DT counterparts into its proposals, projects and activities. For example, GWI works with the Infectious Disease Institute, Translational Data Analytics Institute, Materials and Manufacturing for Sustainability group, and Sustainable and Resilient Economy group. We regularly discuss how we can better collaborate and integrate their new faculty hires and current faculty into our programs and activities. We also discuss new initiatives, primarily interdisciplinary systems focused activities.

As an example, GWI continues to work with Mike Oglesbee (IDI), Ragu Machiragu (TDAI) and Mike Bisesi (CPH) on the proposed Infectious Disease Initiative, in collaboration with three key Tanzania government agencies (Division of Preventive Services within the Ministry of Health, Institute for Infectious Disease, and National Health Laboratory), WaterAid Tanzania, and the Abbott Fund for Tanzania. The proposed network would enhance the Tanzanian government's and research communities' ability to monitor, detect, diagnose and treat infectious disease. A five region pilot project is now being framed and expectations are GWI will initiate fundraising activities in early 2019.

Several OSU faculty work closely with GWI through GWI-funded educational and outreach activities. All of these projects are directly related to the proposal activities and project needs of GWI and provide innovative research opportunities for students.

For example, GWI supports Jane Fife in the College of Food, Agricultural and Environmental Sciences to supervise teams of undergraduate students in the FABE capstone programs. Projects in 2017-18 focused on solar-powered drip irrigation as a viable tool for semi-arid smallholder farmers in Tanzania and food storage systems to reduce food waste.

GWI also collaborated with Joe Campbell and Jeff Sharp in CFAES, School of Environment and Natural Resources, on their student initiatives in Tanzania and GWI regularly supports faculty and student activities at the Mershon Center.

It should be noted that GWI's partnership with the University of Dodoma in Tanzania is central to many of these faculty interactions and educational opportunities. It is our expectation that these activities will expand to include online courses and remote lab operations in the near future, as well as other collaborative course co-development.

GWI therefore is most supportive of collaborating with ASC and the Glenn College to host Mandela Fellows and it has taken a leadership role in collaborating with OIA to secure Fulbright Scholarships for OSU and UDOM faculty. Two Fulbright Scholarships have now been awarded to support GWI related activities. The most recent will bring an MD from the University of Dodoma to work on HIV/AIDs research with Prof. Jesse Kweik in the Department of Microbiology. GWI is now gearing up for a third Fulbright Scholarship from OSU that will focus on online – remote education.

As GWI continues to evolve, it is also interacting with affiliated faculty from other universities in Africa and the US. International interfaces and collaborations are central to the GWI model. Towards that end, we have secured seats on the UN R!SE Committee, the UNESCO Coastal Resilience Collaborative, the NASA Interagency Forum on Climate Risks, Impact and Adaptation and the U.S. Water Partnership. We work to integrate OSU faculty into the associated activities of these organizations to expand their contacts with other research universities.

Currently, we are working to become a member of the University Alliance for BRIDGE, a new coastal resilience initiative funded by European governmental agencies and US companies. Dr. Sathya Gopalakrishnan in CFAES has a keen interest in this research area and in networking with the initial members of the alliance – MIT, Stanford, Delphe, Copenhagen, Oxford and the University of Florida.

Professors Anne Carey (School of Earth Sciences, ASC), Craig Jenkins (Sociology, ASC), Joyce Chen (Dept. of Agricultural, Environmental and Development Economics, CFAES), CK Shum (School of Earth Sciences, ASC), and Sathya Gopalakrishnan (Dept. of Agricultural, Environmental and Development Economics, CFAES) and GWI PIs are also interested in such collaborations for research and education.

Most recently, thanks to our innovative projects and models and interactions with external groups, Dr. Rebecca Gianotti, GWI Senior Research Associate, was invited to be part of a Water Task Force in central Tanzania (led by high-ranking water sector professionals). Amanda Davey, GWI PM, presented at the Columbus Council on World Affairs in March and the WADA project kick-off at the University of Dodoma in June. Jeff Melaragno, GWI Lead Systems Engineer, secured an introduction to LASER, a newly awarded, five-year, \$70M USAID program focused on the long-term needs of US Missions in Africa that recently invited GWI to join as the lead for rural water systems development. Jeff is also working to integrate Ohio State into a new USAID initiative managed by the University of Chicago that focuses on near-term Mission needs. Both of these USAID initiatives are solutions focused. Marty Kress, GWI Executive Director, meanwhile continues to give presentations on GWI to foundations, government agencies, external universities, and working groups, most recently UC Riverside, the US Water Partnership, the University of Florida Bridge Initiative, and the NASA Interagency Forum on Climate, Risk Impact and Adaptation.

In summary, GWI engages with faculty from a multitude of departments and colleges at OSU. Being new and having limited staff, GWI works with a smaller critical mass of faculty in its research, proposal, and engagement activities. This is to help ensure the quality of its products and the quality of interactions. As GWI evolves, it will solicit “affiliated” faculty who share its interests in solving pressing global issues.

## 7. INTERACTIONS WITH OTHER RESEARCH CENTERS

As is the case for faculty interactions, GWI interfaces with multiple research centers, institutes and Discovery Themes at Ohio State. But just as importantly, it also interacts with research centers and institutes off campus as part of its effort to integrate key capabilities to solve pressing global issues.

### **Internal university collaborations**

The GWI Faculty Advisory Committee was framed to give GWI access to leading thought leaders and institutes on campus that would help it address its three key focus areas (Field to Faucet, Wells to Wellness, and Coastal Resilience) and the goal of providing sustainable systems solutions at the nexus of water, food, energy, hygiene and sanitation. Today, GWI continues to interact with institutes and centers in eight Ohio State colleges – from the Technology Entrepreneurship and Commercialization Institute at FCOB to the Institute for Materials Research, the Global One Health Initiative in Veterinary Medicine to the Office of Global Health Initiative at the Med School, the Water Resources Center in COE and the Ohio Sea Grant Program in the OoR, the Agricultural Data Coalition in CFAES to the School of Earth Sciences in ASC.

As noted above, these members of the Faculty Advisory Committee play an active role in framing and executing GWI activities, initiatives and proposals, and serve as a link to other key university centers, institutes and Discovery Themes including Byrd Polar, the Center for African Studies, the Mershon Center for International Security Studies, the Humanitarian Engineering Center, the Food Innovation Center, the Olentangy River Wetland Research Park and the Center for High-Performance Power.

Each of the entities listed above has been part of GWI on-campus reviews with its external partners and visiting dignitaries, from Ministers to University Presidents, as well as presenters at GWI FAC and EAB Meetings. Many of these centers' capabilities are integrated into GWI proposals. An example of this integration of OSU capabilities is the SVWS Program.

GWI also benefits immensely from its relationship with Extension and OARDC. Extension provides insights, data and connections about farming and land/water stewardship practices in Ohio and helps GWI frame concepts for Tanzania. OARDC faculty have provided GWI with insights into solar, wind and biogas energy systems that can be deployed to developing nations for rural farmers.

GWI and the newly established Infectious Disease and Translational Data Institutes at Ohio State have framed an infectious disease monitoring and treatment plan for Tanzania in collaboration with key research groups in Tanzania and the Abbott Foundation of Tanzania. The plan identifies critical laboratory and IT assets to be delivered to regional and district health care facilities. The



plan has now been approved by the Tanzanian Ministry of Health, Office of Preventive Medicine, and National Health Laboratory.

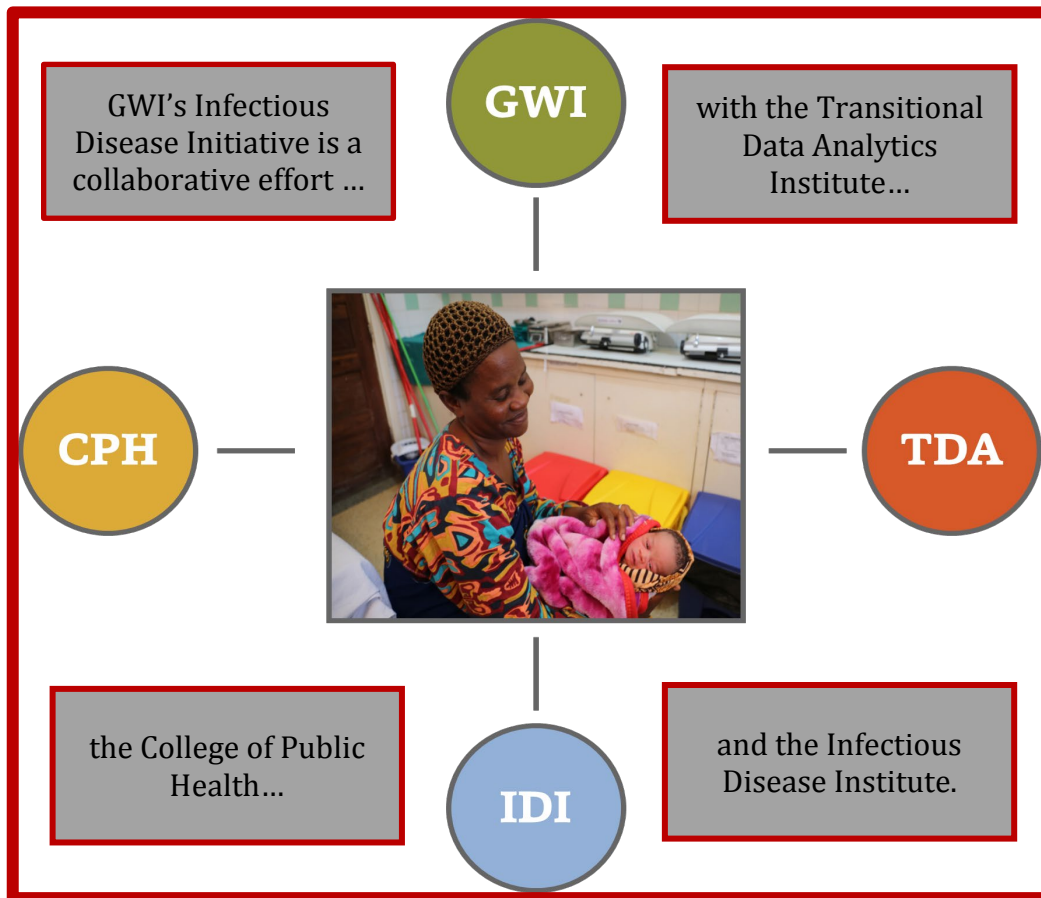


Figure 9: Development of the GWI Infectious Disease Initiative.

### Off campus collaborations

GWI strives to be a “neutral technology integrator,” and toward that end, most of its initiatives and proposals integrate Ohio State assets with those of other US and international entities.

For example, the Harmful Algal Bloom Research Initiative, originally framed by GWI and managed by Ohio Sea Grant, links Ohio State University researchers to the research assets at nine other Ohio universities, including the Lake Erie Center at the University of Toledo and the National Center for Water Quality Research at Heidelberg. This in turn helps establish Ohio State as a thought leader in this domain and enhances our credibility with the initiatives’ funder (Ohio Department of Higher Education) as a reliable actor with proven ability to frame and execute interdisciplinary programs across universities.

The Tanzania infectious disease initiative described above connects Ohio State with the leading medical schools in Tanzania (including the University of Dodoma and the University of Dar Es Salaam), the Institute for Infectious Disease, the Office of Preventative Medicine, the Ministry of

Health, the US Centers for Disease Control, and the National Health Laboratory.

Likewise, the Sustainable Village Water Systems Program connects GWI to the leading research organizations in the Tanzanian government, the key NGOs and international groups in the country framing water, health and sanitation policies, researchers and faculty members at universities across Tanzania.

Although still in its infancy, GWI's Coastal Resilience focus area has already expanded our research network and the potential for collaboration for Ohio State faculty. GWI has a seat on the NASA Interagency Forum on Climate, Risk Impact and Adaptation, and it is part of the UNESCO Coastal Resilience Collaborative led by the University of Florida.

It should be noted the new Florida Earth Institute at the University of Florida is modeled on GWI. GWI and the Florida Earth Institute have been collaborating for years and that is a key reason why GWI is being approached to be a member of the BRIDGE Project.

GWI has been working with key faculty in FCOB, the Tanzania Private Sector Foundation (Chamber of Commerce) and the University of Dodoma to frame a business plan competition for students at UDOM. The current plan is for the event to take place early in 2019.

As noted above, GWI has been invited to participate on several key US and international committees. Most recently it was asked to be part of a Tanzania Water Task Force.



*Figure 10: GWI's Dr. Rebecca Gianotti (front row, second from left) participates in a Groundwater Sustainability Workshop in Singida, Tanzania, with 30 water sector professionals. Image credit: GWI.*

Due to its success in Tanzania, GWI is now briefing key government, university and foundation officials in Kenya and Zambia. A recent trip to Kenya resulted in the KenGen Foundation asking for a pilot project proposal for SVWSs and a recent trip to Zambia resulted in the University of

Zambia expressing interest in an agreement to collaborate along the lines of our agreement with the University of Dodoma.

Most recently, at the request of the Regional Water Engineer in Singida, Tanzania, GWI teamed up with the World Bank and Oikos (Italian NGO) to frame an integrated water services plan for the region of Singida. Partners agreed to use common vendors, common private operations and pricing policies. Oikos helped frame the first step towards franchising water services in Tanzania.

GWI is currently working with a board member at DFID and with WorldServe to share ideas about a new “requirements driven” educational program at the Nelson Mandela Institute in Tanzania. The plan would capitalize on innovations undertaken in the US to make sure college and community college graduates are “work ready” and highly employable.

Collaborating with these entities give us new insights into ongoing and future research activities as well as connectivity to research centers and institutes on other campuses and in other counties.

Thanks to its recent USAID awards, GWI has gained more visibility. Its solutions-focused model is also well aligned with three new initiatives at USAID – the Long Term Assistance and Services for Research Program (LASER), the Research Technical Assistance Center (RTAC), and the Science, Technology, Innovation and Partnership Annual Program Statement (STIP). As of November 30, GWI is pleased to say it has been invited to join the LASER Team and take a lead role in providing research-driven practical solutions to critical development challenges, in particular water. GWI has also been invited to present at LASER’s inaugural Research For Development Conference in Uganda in March 2019.

GWI is also in discussions to be part of the University of Chicago-led RTAC team. On November 21, in collaboration with the International Programs in Agriculture Office in CFAES, it submitted its first STIP proposal for agricultural innovation systems.

As important as are the on campus collaborations to help GWI better understand OSU assets and capabilities, the external collaborations are critical to the GWI model because they give GWI and its engaged faculty access to primary data sets, key decision makers, and pressing customer requirements. By doing the front-end projects for external customers, GWI positions OSU faculty for future R&D activities focused on key capabilities that will address issues in Tanzania and across Sub-Saharan Africa, e.g. hydrology water resources management, franchising for water services, remote monitoring and detection of infectious disease.

## **Proposals Supported by GWI**

In addition to the proposals described in previous sections that are central to GWI’s own project activities, GWI staff supported the development of a number of proposals with other campus units in 2017-2018, as shown in the table below.

Table 6 – GWI Faculty Proposal Support

| Title   | Unit   | Agency    | Co-PI         | Date       | Outcome  |
|---|--|-----------|---------------|------------|----------|
| Building Market Driven Management Approaches For Sustainable Water Quality And Quantity In Production Agriculture                 | FABE   | USDA/NIFA | Scott Shearer | 7/31/2017  | Unfunded |
| Building Global Research Capacity for Development: A Long-term Assistance and Services for Research (LASER) Cooperative Agreement | Intl. Programs in Agriculture<br>TDAI<br>Global One Health Initiative<br>EHE | USAID     | Mark Erbaugh  | 1/25/2018  | Unfunded |
| Engineering Research Center Planning Program  | Public Health  | NSF       | Mark Weir     | 6/1/2018   | Pending  |
| Optimized Shrub System (OSS): an Innovation for Landscape Regeneration and Improved Resilience for the Peanut-Basin of Senegal    | SENR   | USAID     | Richard Dick  | 6/29/2018  | Funded   |
| AG-Innovate Partnership (AIP)   | Intl. Programs in Agriculture  | USAID     | Mark Erbaugh  | 9/21/2018  | Pending  |
| Optimized Shrub System (OSS): an Innovation for Millet Sustainable Intensification and Landscape Regeneration of the Sahel        | SENR   | USAID     | Richard Dick  | 11/28/2018 | Pending  |



## 8. OTHER MAJOR ACTIVITIES

### Educational Activities

One of the areas where GWI has the greatest potential to advance the Ohio State core mission is in providing opportunities for enhancing the undergraduate and graduate student experience. The nature of GWI's interdisciplinary work lends itself well to the types of applied, meaningful, world-changing experiences that students seek and employers reward.

These opportunities offer a range of benefits beyond personal enrichment for the student. They strengthen learning by providing students an opportunity to apply classroom lessons to real-world examples. They provide practical work experiences that will enhance post-graduation employment options. They develop a sense of humanitarian service that can stimulate entire careers with meaningful purpose. They progress the land-grant mission of Ohio State to apply academic knowledge in service of the public good. And all these opportunities will, in turn, advance GWI's goals.



*Figure 11: Katie-Lynn Dheel takes a break from farming at the FABE drip irrigation capstone test plot at the Waterman Agricultural and Natural Resources Laboratory. Image credit: Jeff Melaragno.*

Central to the Student Engagement activities are Capstones and GAP projects, student research activities, and support of new initiatives with the Global Gateways, Global Villages Initiative, and college international project offices. Capstone projects focus on issues directly linked to sustainable supplies of water in an environment experiencing severe climate change. Drip irrigation to produce food and conserve water as well as defluoridation of water that is accessible but not drinkable are two key areas where GWI has engaged students. Now, in collaboration with



Global Gateways and Global Villages, our activities are being expanded to include projects related to agriculture, food storage, civil engineering, and hygiene.

In 2017-2018, GWI provided a total of \$18,200 to support student engagement activities across campus, as shown in the table below.

|  |                 |
|--|-----------------|
| FABE capstones 2017-2018                                 | \$3,000         |
| ChemE capstone AU 2017 -- ASC                            | \$2,000         |
| Hackathon and Makeathon                                  | \$2,200         |
| Engineers Without Borders -- COE                         | \$7,000         |
| World Water Day 2018 Research "Un-Poster" Session -- ASC | \$4,000         |
| <b>Total Student Activities/Capstones/GAPs</b>           | <b>\$18,200</b> |

GWI sponsored 7 senior capstone design projects in CFAES and COE in 2017-2018, as shown in the table below.

| <b>Project Title</b>  | <b>Term</b> | <b>Department</b>                             | <b>Faculty Advisors</b>          |
|---|-------------|---|----------------------------------|
| Rainwater Harvesting for Rural Tanzanians   | AU16, SP17  | Food, Agricultural and Biological Engineering | Jay Martin, Jesse Blount         |
| Farming Innovations for Semi-Arid Tanzania  | AU16, SP17  | Food, Agricultural and Biological Engineering | Andrew Ward                      |
| Defluoridation of Groundwater in Tanzania   | AU17        | Chemical and Biomolecular Engineering         | Jeffrey Chalmers                 |
| Post-Harvest Processing and Grain Storage of Crops in Tanzania                                    | AU17, SP18  | Food, Agricultural and Biological Engineering | Ajay Shah<br>Kristen Conroy      |
| Soil-Moisture Analysis to Improve Agricultural Yields in Semi-Arid Regions                        | AU17, SP18  | Food, Agricultural and Biological Engineering | Margaret Kalcic<br>Patrick Sours |
| Low-Cost Solar Oven To Recharge Bone Char In Household Defluoridation System                      | SP18        | Chemical and Biomolecular Engineering         | Jeffrey Chalmers                 |
| Using Low-Cost Crop Surveillance Drones to Improve Smallholder Agriculture Production in Tanzania | AU18,SP19   | Food, Agricultural and Biological Engineering | Sami Khanal                      |

*Table 7 – GWI Capstone Projects*

In addition, GWI supported 4 graduate research assistants – MBA students from FCOB – who have gained applied experience while helping to develop GWI’s market oriented solutions for rural water and health services.

Through the research grants provided by GWI to ASC faculty member Dr. Audrey Sawyer, three senior undergraduate students have completed Honors Theses that leverage GWI data, networks and resources in Tanzania. Two of those students were able to present their work at national conferences and are co-authors on a journal paper currently under review, gaining valuable experience to add to future graduate school or job applications.

As GWI projects in Tanzania and GWI collaborations through the Global Village Initiative expand, the potential for Ohio State students to acquire practical experience and real-world research opportunities will only increase.

Finally, a new course in franchising will be introduced in FCOB courtesy of GWI External Advisory Board member Michael Seid, in collaboration with GWI FAC member Dr. Keely Croxton.

## **Outreach and Engagement**

Having addressed some of the key internal outreach and engagement activities under Faculty Engagement at Ohio State, this section will focus on external outreach and engagement.

### **External Advisory Board (EAB) – US and International Connections**

A key dimension of the GWI Outreach and Engagement Plan is capitalizing on the members of its External Advisory Board (EAB) for external activities, similar to use of the FAC for internal activities. The EAB Members, seen below, include key representatives from the business community, the international community, governmental agencies, universities, and the not for profit community, in both the US and in East Africa. The membership of this committee is an outgrowth of early interactions between GWI, Grief Industries and the World Business Council for Sustainable Development.

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*“As an Ohio State alumnae and a development practitioner for over 20 years, I am proud to see my alma mater create new models for economic development in Sub-Saharan Africa. The sustainable village water system plus franchising water services are game changers, especially as governments and development organizations strive more and more to leverage public-private partnerships to tackle complex development challenges. GWI's ability to integrate key in-country assets and to secure the support of the Government of Tanzania to provide sustainable solutions has made them a partner of choice for the World Bank and other key NGOs and not-for-profits.”*

*Maria Eileen Pagura, Ph.D.  
Vice-Chair, GWI External Advisory Board  
Senior Program Officer, World Bank*

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*“I was first invited to Ohio State by Grief Industries for a meeting of the Global Sustainability Business Council, at which the GWI Model was presented. I knew then that Ohio State had something truly unique that I wanted to be part of. In less than three years, GWI has differentiated itself from other programs with its introduction of innovative, market-based solutions to solve pressing global issues, in particular sustainable supplies of water to rural Tanzanians.”*

*Ian Reece.  
Chair, GWI External Advisory Board  
Former Managing Director, Rabobank*

## **Chair**

**Mr. Ian Reece** – Former Managing Director, Rabobank

## **Vice-Chair**

**Dr. Maria Eileen Pagura** – Senior Program Officer, World Bank

## **Members at Large**

**Dr. Araya Asfaw** - Executive Director, Horn of Africa Regional Environment Centre and Network, Addis Ababa University

**Mr. Thomas S. Blackstock** – Former VP Supply Chain Operations and Director of Clean Water Strategies, Coca Cola

**Ms. Monica D. Ellis** – CEO, Global Environment & Technology Foundation

**Prof. Flora Fabian** – Director of Research, Publications, Innovations, Consultancy, and Collaboration, University of Dodoma

**Mr. John Garland** – Attorney at Law, Former President of Central State University

**Mr. Bahati Hakimu** – Regulatory Services Officer, Sugar Board of Tanzania

**Mr. Kris Kaffenbarger** – VP for System Optimization, The Wendy’s Company

**Eng. Emmanuel N.M. Kalobelo** – Deputy Permanent Secretary, Ministry of Water, Tanzania

**Mr. Lukas Kwezi** – Adviser, Department for International Development, Tanzania

**Mr. Chris Long** – Founder and Executive Director, The Chris Long Foundation/Waterboys

**Mr. Alais Ole-Morindat** – Former Chairman, Tanzania Natural Resource Forum

**Mr. Michael H. Seid** – Founder and Managing Director, Michael H. Seid & Associates, LLC

**Dr. Winston Oluwole Soboyejo** – Provost, Worcester Polytechnic Institute

**Mr. David Wilhelm** – Partner and Chief Strategy Officer, Hecate Energy

Thanks to this board, GWI over the last 18 months has been engaged in key meetings with the World Bank, UK’s Department For International Development (DFID), World Vision, State

Department, the Wilson Center, GETF, Global Green, Green Cross, Oikos, USAID, WaterAid, US Mission in Tanzania, Dewji Foundation, KenGen Foundation, MPI Foundation, the governments of Tanzania, Kenya, and Zambia and their associated universities. GWI also has been invited to meetings that enabled it to interact with the ministers of Sub-Saharan African countries at the State Department and African legislators at USAID. As noted before, GWI is now a member of the U.S. Water Partnership and other key groups.



*Figure 12: EAB members (from left) Chair Ian Reece, former EAB member Ron Hendrick, Monica Ellis, Thomas Blackstock, Co-chair Maria Pagura, Michael Seid, GWI Executive Director Marty Kress, and David Wilhelm at an EAB meeting in Columbus, Mary 2017. Image credit: GWI.*

As importantly, these interactions have enabled GWI to engage in discussions with other universities running programs for USAID, including Purdue with the LASER Program and the University of Chicago with RTAC.

The EAB has been an active champion of the GWI's SVWS model, in particular its emphasis on private operators and a structured pricing policy. Thanks to the EAB, OSU is one of the only university members of the International Franchising Association. GWI made a major presentation to the IFA in February of 2018, which led to the creation of a GWI Task Force, still in operation, to help promote franchising for sustainable water services in East Africa. The core concept for this initiative was framed by GWI and FCOB and refined by members of the EAB from Coca Cola, Wendy's and MSA International. The Task Force has members that worked for or are working for the Rabobank, Coca Cola, World Bank, Social Impact Investors, WorldServe, MSA International and Ohio State.

The EAB, in particular Rabobank and the World Bank, was also the catalyst for GWI to secure the services of Geneva Global in Philadelphia to identify foundations likely to support GWI activities. That initiative opened the door for GWI to the Dewji Foundation in Dar Es Salaam, Tanzania, and the KenGen Foundation in Kenya. GWI now hopes it will open the door to other key foundations in the near future including the IKEA Foundation and the Forbes Donor Conference. Both of our EAB advocates had worked with Geneva Global and knew of its unique capabilities to identify key foundations.

GWI and its EAB have enhanced the reputation of OSU as a problem solver, a creative thinker, and a neutral technology integrator.

## In-Country Tanzania Activities

When in Tanzania, the GWI Team excels at outreach and engagement and it has built an incredible network of key partners and advocates. This list includes WaterAid, Tanzanian Private Sector Foundation, Coca Cola, Oikos, TANESCO, World Bank, DFID, Abbott Foundation, Global Partners for Development, Trees For the Future, BM Farm Africa, and our original partner in Tanzania, the University of Dodoma. These relationships are further layered by government agencies both in the capital city, Dodoma – the Ministry of Water, Ministry of Energy, Ministry of Health and President’s Office for Regional Administration and Local Government – and the Regional Secretariats and Local Government Agencies (RS-LGAs) in the individual regions and districts where our projects are active, particularly Singida.

Regarding UDOM, GWI continues to support its proposal to develop a 100 MW solar power plant on campus in collaboration with Hecate Energy, a GWI EAB Member. Hecate’s recently submitted proposal would site the power plant on the UDOM campus. It represents a unique public-private partnership and a unique power purchase agreement. If awarded, GWI and UDOM will use the project to design a renewable energy program at UDOM in collaboration with key OSU researchers.

GWI has also used its network at State and the US Mission in Dar Es Salaam to secure two Fulbright Scholars in support of GWI-UDOM activities.

As noted above, our recognition as a thought leader by key officials in the Ministry of Water was central to our integrated project plan for Singida with the World Bank and Oikos. Getting all of the parties to agree on the vendors, agreements, private operators, and pricing policies was key to the MOW’s new initiative. This initiative also played a key role in securing GWI its new GROWS grant from USAID and membership of the Tanzania Water Task Force.

Be it a district engineer, regional supervisor, or Director of Rural Water Supply in Tanzania, GWI has met with prominent members of these leadership teams and staff on a regular basis to discuss the SVWS program. It is now including Agricultural Extension officers in these discussions and site visits and already this has gained GWI recognition for its agricultural collaborations with Trees for the Future and BM Farm Africa. GWI has done the same with key directors of and staff in the Ministry of Health, the National Laboratory System, and the Office of Preventive Medicine regarding its new infectious disease initiative.

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*"As impressed as we are with the ability of GWI and its team to raise money for rural water services in Tanzania, we are more impressed with your ability to integrate in-country organizations to provide sustainable systems."*

*Director of Rural Water Supply, Ministry of Water, Tanzania*

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At the same time, our growing recognition by the US Mission in Dar es Salaam, led to discussions in the spring of 2018 on in country collaborations with Jacobs Engineering. The Mission identified GWI and OSU as “partners of choice”.

For the last two years, GWI has been working to secure an opportunity to present to the OSU Alumni Association. Now that goal could that soon be a reality. GWI recently agreed to support an OSU Alumni Association-sponsored trip to Tanzania to showcase what GWI and other OSU faculty and staff are doing in Tanzania. GWI is now designing a “Did You Know” brochure that will link the 2019 alumni trip with OSU activities in Tanzania. As tour participants enter a national park, they will have in their hand a mini-brief about water, sanitation, hygiene and agricultural issues and what GWI projects, research and student activities are doing to tackle those issues near that park. The trip will also include a stop at an orphanage being supported by OSU faculty and staff.

The next step will be an article in the OSU Alumni Magazine and a presentation at an upcoming alumni meeting.

## East Africa Activities

Based on its growing visibility in Tanzania and the incredible networks of its EAB members and partners, GWI has been invited in recent months to present its SVWS model and its university collaboration model to government and university officials in Kenya and Zambia. Both concepts were very well received. Sustainable systems solutions are in big demand throughout East Africa and those that integrate key market mechanisms seem to be the best received concepts.

Now pending are invites to GWI to brief its concept and programs in Djibouti and Ethiopia. GWI works closely with the OIA on these activities as well as with faculty already in country – such as GOHI in Ethiopia.

GWI signed an MOU with GOHI when it was created to support its activities. Today, GWI supports GOHI activities in Ethiopia and it is working with GOHI to see them expand across East Africa.

In November 2017, the Executive Director of GWI represented the OSU Office of Research at the 2018 GOHI 4<sup>th</sup> International Conference in Qatar. The meeting gave the Executive Director the chance to broaden his understanding of the one health movement and to meet some of the key practitioners and researchers in the field in East Africa including the OSU Regional Director in Ethiopia, Dr. Getnet.

## Tools for Outreach and Engagement

When GWI’s Director of Communications and Networking took at new job at OSU in January 2018, GWI found itself in a quandary – how to replace one of the best in the business and what tools should it use to get the job done. When you already have too much work on your plate and not enough resources, you work to optimize your time and focus. To that end, GWI hired two student interns, one a social media guru and the other a great writer and visualizer of ideas and

concepts.

GWI is still in the test phase as to where to put its focus, but it is working to capitalize on tools that convey our message to the broadest possible audience, as well as on framing periodic updates to the FAC, EAB, and IOC. Hopefully, when we secure a new Director of Communications we can put the energy into this function that is required.



*Figure 13: The Allenby Bridge in Arusha, TZ. Sponsored by Tricia (COM) and Gregg Allenby (FCOB) for the Camp Joshua Farm.*

## 9. BUDGET

### FY18

The GWI Budget for FY18 was established pursuant to an MOU signed by the Provost, the Senior Vice President for Research, four deans (CFAES, COE, ASC, FCOB), and the Director of GWI in July 2016.

Unfortunately, ASC due to severe internal budget issues was not able to honor its FY18 commitment or its FY19 commitment. ASC had committed to an investment of \$155,000 per year. This left GWI facing a \$310,000 sources deficit for FY18 and FY19.

GWI was able to absorb that reduction in FY18 by:

- Deferring the recruitment of a senior faculty advisor,
- Not immediately filling the vacant Director of Communications and Networking slot,
- Not bringing on board the proposed successor to the Executive Director of GWI on a part-time basis, and
- Using the last increment of prior year unobligated funding to initiate its new Pilot Program in Tanzania in November 2017 and cover other costs.

GWI had intended to use its prior year unobligated funding (i.e. carryforward) to cover the cost of the proposed part-time Executive Director hire. The goal was to have the current and proposed Executive Director work together for nine months to make sure the right candidate was in place to provide a smooth transition. GWI, in collaboration with the SVP for Research and the Provost, had framed this succession plan for the GWI Executive Director. The candidate was based on a search led by the Executive Director of GWI. In 2016, GWI initiated a search that focused on attracting a recognized faculty member and research leader to do the job. Based on the results of that search, the 2017 search focused on attracting an expert in business development, project formulation and execution, and fundraising.

Revenue sources for FY18 were \$1,250,008 inclusive of OSP grants and carryforward from FY17. Operating costs were \$1,188,008 inclusive of OSP grant expenses, of which F&A expense totaled \$6,200. See Appendix C.

The key source of revenues for FY18 (reflected in the budget in FY18 and FY19 sources) was the USAID WADA Grant, a key win for GWI. This \$1M grant is matched by WorldServe and WaterBoys, with additional funding of \$25,000 from partner Global Partners for Development, bringing the total project for 36 village water systems to \$2.025M – enough funds to positively impact over 120,000 people.

GWI submitted three winning proposals in 2018 in collaboration with its key partners. Total awards were \$4.3M: WADA \$2M, GROWS \$2M, and the MPI Foundation \$300K. GWI was also integrated into the WaterAid Donor Solicitation and the Purdue-led LASER Program.

## FY19 Goals

In FY19, GWI has been able to absorb the reduction to its budget by delaying the hiring of the Director of Communications, delaying the recruitment and onboarding of a senior faculty advisor, and by allocating the cost of two core staff members to both direct (OSU funds) and indirect (USAID Grant Funds and support from other organizations on campus – GWI staff appointments to non-GWI grants).

### Business Development

Secure funding for pending proposals from KenGen, Dewji, and WaterAid to provide key endorsements and funding

Secure another USAID grant – WADA project for Kenya is candidate

Secure seat at the table for new USAID project funding areas – LASER, RTAC, Securing Water for Food. Introductions have been made to all USAID Directors.

Gain OSU endorsement and build a team and proposal that can capture MacArthur Foundation grant of \$100 M – Infectious Disease Initiative is candidate

Secure membership for GWI-OSU in the soon-to-be-created Blue Resilience Initiative for the Development of Global Excellence – meeting with initiative leadership in December

### Outreach and Engagement

Increase GWI outreach activities – Did You Know sessions, Voices from the Field

Collaborate with Ohio State Alumni Office to frame Did you Know booklet about OSU activities in Tanzania – Alumni Office plans to do story on GWI

New course at FCOB taught by GWI EAB member Michael Seid, as a result of his lecture on the value of franchising to solve key social issues

Start a lecture series with key thought leaders in East Africa to give better insight into the nature of problems East Africans face

Create a film covering the WADA project, and be featured in the NFL Films release of the March 2018 Kili Climb with NFL players, Wounded Warriors, and WorldServe

For the current budget year, FY19, GWI is assuming that all GWI investors will honor their MOU commitments with the exception of ASC. To date, two organizations have provided their MOU commitments totaling \$410,000 (OR and FCOB). Based on all MOU commitments, the proposed GWI budget for FY19 is attached (FY19 budget as well as FY19 actual expenses as of 11/30/18, including encumbrances – see Appendix C).

GWI has allocated its small research grants for FY19 (internal fund transfers) and it has put its project subcontracts in place. GWI has also initiated a new Capstone Project with CFAES and a new GAP project with FCOB. The GWI budget also honors its commitment to another MOU to provide \$25,000 of support to GOHI.

The proposed GWI budget for FY19 also assumes that the current Executive Director will shift to three days a week commencing in January 2019 and that he will remain at the helm for another year, if not two, in addition to a salary rebasing of \$200,000 per year. During that time,

the assumption is that either (i) a search for a new director will be executed if GWI remains as a standalone entity, or (ii) OSU will hire a new senior program manager to oversee GWI contracts and activities if GWI is merged with another institute. If the Executive Director is required to put more time in every week, that option is viable too.

The proposed GWI budget for FY19 shows projected revenues in the FY19 Budget column and actual expenses, including encumbrances, in the FY19 YTD actuals column (expenses as of 11/30/18).

Projected revenue sources for FY19 total \$6,932,492 inclusive of OSP grants. Operating costs are proposed to be \$6,889,492 inclusive of OSP grant expenses and encumbrances, of which F&A is projected to be \$646,994 (fully encumbered). Assuming projections are accurate and assuming the colleges honor the commitment amounts in the MOU (with the exception of ASC) GWI will end FY19 with a surplus of approximately \$45,000.

As noted in the Business Development Section, GWI focused for two years on securing a Water and Development Alliance Grant from USAID. GWI knew that this grant would enhance its visibility in USAID, increase its competitiveness for future awards, and gain a key endorsement for its Sustainable Village Water Systems Model that would attract other investors.

As depicted in the Box below, GWI’s assumptions have proved correct. GWI was just awarded a new USAID grant, GROWS, for \$844,000, it was just added to the USAID LASER long-term research team, and it has a donor solicitation on the street with WaterAid USA.

| <b>GWI Current FY19 Projected Revenues</b> |                 |                |                 |
|--|-----------------|----------------|-----------------|
| <b>Projects</b>                            | <b>Revenues</b> | <b>F&amp;A</b> | <b>Research</b> |
| Awarded USAID GROWS Grant                  | \$844,000       | \$279,000      | \$265,000       |
| Pending WaterAid Grant                     | \$2.5M          | \$75,000       | \$650,000       |
| Additional USAID Funding (LASER)           | \$1.5M          | \$200,000      | \$650,000       |

The numbers for funded or likely to be funded projects in FY19 represent a ROI of 5:1 revenues to OSU investment of approximately \$1M; 1.5:1 ROI for new research initiatives to OSU investment, and .5:1 for F&A.



# 10. FUTURE PLANS AND METRICS OF SUCCESS

## Summary

The GWI Team believes that it is now well-positioned to play a MAJOR role in East Africa and, if given a leadership team role, in the Midwest Region of the US as well. GWI also believes that it will be able to integrate OSU researchers into a major new coastal resilience initiative in the not too distant future. This is an area of increasing interest due to climate change.

To further enhance our position on any key research or project domain related to water, food, energy, hygiene and sanitation, GWI needs to do the following four things well:

1. Successfully execute its projects in Tanzania, Kenya and Uganda.
2. Validate its innovative business models in a real world environment and then introduce the next phase of the model – franchising for water services.
3. Continue to frame new initiatives and projects that brand OSU as the Land Grant University of the Future – implementer of highly integrated, requirements-driven, sustainable, systems oriented projects.
4. Continue to attract key thought leaders, domain leads, and funders to the equation – sustain its role as a neutral technology and thought integrator.

**NOTE:** Based on the fact that GWI is assessing a set of options regarding its future state and the leadership of GWI, the GWI Team has included a Section 9 in this report to discuss both of these issues.

## Overview of Plans and Activities for FY2018-19

### Step One – Staffing

- Staffing of GWI will include filling the existing slot for Communications and Networking Director and securing a key faculty advisor.
- Get an approved succession plan in place for the Executive Director.
- Resolve the go-forward plan for GWI – standalone entity, integrated with another OSU institute, transition to PI-led activities, transition to a third (non-OSU) party.
- IF the GWI MOU were fully funded, GWI would also find a way to hire two additional people – one a returning Peace Corps Volunteer and the other a past Mandela Fellow with key domain knowledge around a new initiative.
- Further down the road, if GWI continues to grow, it would like to have staff in East Africa. But that is a future discussion.
- Building the right team is the key to success for GWI.

*Metric for Success:* Having a full staff complement by May 2019 and an approved succession plan for the GWI Executive Director.

## Step Two – Business Development

- Secure funding for the proposals GWI has pending with the KenGen Foundation, Dewji Foundation and WaterAid. These will manifest support of the GWI SVWS concept and represent key endorsements as well as funding sources.
- Secure another USAID grant – candidate is a WADA project for Kenya. Discussions have already been initiated with the nominee to be the next Ambassador to Kenya.
- GWI was also informed recently that USAID might be receptive to a Phase II WADA for Tanzania based on our success to date.
- Secure a seat at the table for the new USAID project funding areas – LASER, RTAC, and Securing Water For Food. Introductions have been made to all of the Directors at USAID and favorable discussions are already underway. These new projects provide opportunities for GWI as well as individual faculty members for funding on short-term and longer-term projects.
- Gain OSU endorsement and build a team and a proposal that can capture or at least get us in the top ten for a MacArthur Foundation Grant. The \$100M Challenge Grant awards the full funding to the winner. But based on the last competition, the top ten candidates secured funds from MacArthur and other foundations. We competed for a MacArthur Foundation Grant in 2016 – had a good team and a good concept – but we are now positioned to submit an even better proposal since we have ongoing projects, collaborations and support that should help, including key partners that can help us take the concept across Sub Saharan Africa. Our new Infectious Disease Initiative in Tanzania could be a candidate for the next round.
- Continue to support activities related to securing the cost share for our USAID – Coca-Cola WADA project with WorldServe and WaterBoys. GWI just got notification that the MPI Foundation in Connecticut will donate \$325,000 to WorldServe as part of its cost share. GWI penned this proposal. Also just held a fundraiser with the WaterBoys that secured \$100,000.
- Current list of future activities includes the Kili Climb in March, the TPC Golf Fund Raiser in April, the WaterBoys Event in May, and more to come. A one-day golf event is also being set up by the Nicklaus Family to support water projects in Tanzania. These activities all support our matching cost share requirement for WADA. But in parallel – they put us in front of key donors – a good place to be if we are to secure future funding.
- These activities have also led to a new fund raiser group for water projects in Tanzania, the NBA Hoops2O led by Malcolm Brogdan of the Milwaukee Bucks. Discussions are also underway with key figures in the PGA and PGA Foundation to support investments in wells. NBA Hoops2O will be managed by the Chris Long Foundation WaterBoys.
- All of these activities represent the GWI catalytic funding model and securing multiple funding sources for each dollar raised.
- Meet with Rotary International and secure their support for layering each well the NFL or NBA funds with hygiene and sanitation in the schools and clinics and new agricultural activities. This would be a fundraising activity in parallel to the WaterAid initiative. Initial discussions have started and we are working to schedule a key meeting with Rotary International in February 2019.
- Secure membership for GWI-OSU in the soon to be created Blue Resilience Initiative for the Development of Global Excellence – initial focus area is coastal resilience. Discussions on

this initiative have already commenced and GWI will meet with the initiative leadership in December. Initiative will be funded by the EU governmental organizations and US firms.

- Secure additional membership for GWI on other key advisory boards and international organization – further our thought leader reputation. GWI currently has seats on several key boards. The goal is not numbers of boards – but rather boards of standing.
- Secure membership on advisory boards and task forces in Africa. Pleased to note that GWI is now represented on the Tanzania Water Task Force (only non-Tanzanian representative). Rebecca Gianotti represents GWI. Other GWI staff are also well equipped to support such task forces and advisory groups.

### *Metrics for Success:*

1. Securing funding in collaboration with WaterAid for the full SVWS model in 37 villages in Tanzania – securing a major R&D grant
2. Securing another grant from USAID – initial goal is a WADA Project for Kenya
3. Getting the final Dewji and KenGen proposals approved
4. Being selected to submit a MacArthur Foundation Grant
5. Presenting at the Forbes Major Investors Meeting
6. Initiating funding proposals with at least two more foundations

### **Step Three – Outreach and Engagement**

- Increase GWI outreach activities both on campus and in other locations.
  - The GWI Did You Know Session and Voices from the Field validated a high level of activity going on in Africa and the level of interest on campus – faculty and students alike – to be part of solving the problems of developing nations.
  - What also differentiated it from other such events was the linkage of each activity to a future activity and the level of collaboration that is taking place regarding projects in Tanzania.

Based on our ongoing and recently approved activities, GWI now has a story to tell. So compelling is the GWI work in Tanzania that we are now collaborating with the Ohio State Alumni Office to frame a Did You Know booklet about OSU activities in Tanzania for a tour OSU is sponsoring in March. In parallel, the Alumni Office plans to do a story about GWI in its magazine and get us an invite to speak to alumni.

- Prior to these events, a GWI EAB Member, Michael Seid, lectured to the MBA students at FBOB on the value of franchising to solve key social issues. He used examples of his own activities in Kenya and Rwanda. Outcome of this event was the creation of a new course at FCOB that Mr. Seid will start teaching in June 2019.
- Activities like Voices from the Field and Did You Know will be repackaged and offered to faculty and students at OSU and special event sessions will be held for students across campus. We can also use these events to increase our insight into activities in Africa
- Would love to be able to create an interactive globe that let OSU alums, student and faculty touch a country and see what OSU is doing in that country to address pressing issues and improve the quality of life.

- Key to our outreach and engagement activities is securing approval to fill our Director of Communications and Marketing slot. This person drives this function for us and needs to be a professional who can work with all types of media.
- At the same time, GWI is in discussions with key thought leaders in East Africa to start a lecture series where faculty and staff at OSU can gain key insights into the nature of problems people there are dealing with.
- In the past, GWI has teamed with other OSU organizations on World Water Day. In 2019, however, if all goes well, we will be teaming with NBA Teams to come up with some special activities and events.
- Over the coming year, GWI also will create a film that provides viewers with insights into its WADA Project in Tanzania. Hopefully, this fall, NFL Films will release its film on the March 2018 Kili Climb. This film will feature NFL Players, Wounded Warriors, WorldServe and GWI.
- Lastly for the coming year – GWI will identify three key forums where it needs to present. Emphasis will be given to key events held at universities in the US.
- During the past year, GWI presented to the International Franchising Association Meeting in Arizona in November, the African Ministerial Meeting in DC in February, the Columbus Council on World Affairs in March, the Global Green Foundation at its Earth Day Event in Texas in March, and the Dewji Foundation in May.
- Already in 2018-19, GWI has presented to the KenGen Foundation and Kenyan Government in September and October, the University of Zambia in September, the Water Resources Conference in Tanzania in October, and at International Day at UC Riverside in November. Next on the schedule is the Florida University BRIDGE Meeting in December.
- In parallel with presentations to key government, university and international groups, GWI also on a regular basis will continue to present to key donors at fundraising events sponsored by our partners – in particular WorldServe and WaterBoys.
  - Getting the word out to key research universities – our primary target - should help position OSU with government funded initiatives and provide new pathways for OSU researchers to engage in collaborative research.
  - Getting the word out to more OSU faculty and researchers should help GWI frames its next set of proposals and initiatives.

*Metrics for Success:*

- GWI Presents at USAID sponsored Water Conference at UNC
- GWI Presents at a meeting of LASER or RTAC or Supplying Water for Agriculture
- GWI Presents in a major venue for World Water Day
- GWI WADA Film attracts additional funding for GWI
- GWI secures space in the Alumni Magazine and gets to present at an Alumni Meeting
- GWI gets an article in another university magazine – e.g. MIT
- GWI sponsors a highly successful Did You Know Event around East Africa
- GWI is asked to brief the OSU Board of Trustees on requirements based research initiative
- GWI creates a lecture series featuring key thought leaders in East Africa and at OSU

## Step Four – New Student Initiatives and Activities

GWJ has spent the last year in close collaboration with faculty and students to better understand how our projects and research activities could engage them in meaningful and productive activities – not just a trip to an African nation but engagement in a project plan that will improve the quality of life for people and allow OSU students to return to a site year after year.

With the advent of its Pilot Projects and WADA Project in Tanzania, GWJ now has in effect forty sites where students and faculty can work directly with rural communities on an array of issues that intersect with water, food, energy, hygiene, and sanitation, and secure sources of food. Recently, the OSU leads for the Global Village Program and the Global Gateways Program traveled to Tanzania to get a first-hand look at our “experiential incubator” and they were impressed.

Now we are working to frame a set of project plans that students could travel to Tanzania in 2019 to execute. In addition, we continue to frame Capstone and GAP projects to assess key issues.

One thought we have had for the last few years was to initiate a Big Ten Competition around innovative technical solutions for pressing issues, such as a low cost water defluoridation system, an improved food storage capability, a low cost cook stove, or a distributed energy network, food processing or refrigeration system for a cluster of villages. Our goal is to vet this concept with others at OSU and with our connections at the Big Ten Universities such as Peter March at Rutgers, Ron Hendrick at Michigan State, etc. The objective would be an augmentation to our humanitarian engineering program with a focus on sustainable design to cost systems solutions.

## Step Five – Leadership Engagement

The GWJ Team is committed to better integrate members of the OSU leadership team into the GWJ fan club both for what it is doing and as a model for what others could do in a requirements driven, systems solutions oriented world.

Ohio State is a huge university and GWJ is a flea on the dog when you look at the overall research budget, the number of students and classes, the number of engaged faculty, annual revenues and F&A. But when it comes to innovative approaches to pressing global issues, and integrated innovative implementation teams, GWJ has established itself as a thought leader and a respected partner for several internationally recognized partners. That is the GWJ value proposition to Ohio State and why it would like to have more access to the OSU leadership team.

At present, GWJ meets collectively with the OSU leadership team once a year. It would like to make that more frequent and to change the nature of the meeting from an assessment of primarily F&A and revenues to a set of discussions regarding innovation and the evolution of university research activities at the state, federal and global level.

**Towards that end, GWJ will conduct a series of trips to Tanzania in 2019 that in addition to visiting field sites and conducting project oversight, will provide members of the OSU leadership**



team with the opportunity to meet key government, non-governmental and university officials engaged with GWI. These trips will highlight activities and relationships of interest to OSU and opportunities to assess how what is being done could be transitioned to other countries where OSU is engaged or vice versa.

GWI will also convene panel discussions on campus to expose members of the leadership team to key issues that face institutes and centers across the OSU campus – a requirements based world, demand for systems solutions, non-monetary factors in evaluations of merit, enabling non tenured faculty to secure tenure, international online collaborations and remote courses, remote access to key speakers and thought leaders, innovative financing of future sustainable water systems, etc.

And finally, GWI will strive to get members of the leadership team to the next Did You Know Session. Folks on the leadership team need to know what OSU faculty and staff are doing per GWI and government funding OR their own nickel and time. The latter is what makes OSU unique and validates a value proposition for OSU as the Land Grant University of the Future – Solving Pressing Global Issues.

GWI will also convene at least one joint meeting of its EAB and FAC every year to which key members of the leadership team will be invited to engage in discussions of timely topics and issues.

Not unlike many institutes and centers at Ohio State, GWI's key champion has moved on. To be sustainable as an institute, GWI needs to work harder to gain broader support from OSU leadership and it is committed to that goal and objective.

# 11. CHALLENGES

The Challenges that face GWI are common to new initiatives at Ohio State, a national lab, or a private company. GWI has already shared most of these challenges with the SVP and ASVP for the Office of Research. Far from sitting idly, we are developing solutions that address those problems and challenges.

## Challenge #1 – Predictable Investment Plan

GWI signed an MOU that was to provide five years of funding. In only two years, the MOU unraveled, and still today, firm budget guidance has not been given even though we are more than half way into the fiscal year.

GWI has prepared an Overview, a GWI Value Proposition, and now an Annual Report with the expectation that come the New Year, it will have a clear budget run out for the next three years.

As noted in this Report, that investment is critical for funding a key faculty position in support of GWI. GWI had one to start, but that did not work out so we would like to fill the slot with a new faculty member that supports GWI's full portfolio of projects and activities.

OSU needs to consider options for funding institutes that do not rely on college cash investments. Colleges should be asked to contribute faculty or staff support and the university should pay for the core operating expenses.

## Challenge #2 – Leadership Awareness and Support of the GWI Model and Ohio State International Initiatives – Goals and Objectives

GWI was created as a requirements-driven, customer-focused, solutions-oriented Institute – an Institute focused on applied research and solutions to pressing global issues. It has had great success in a short period of time in this space – from the crafting of the Harmful Algal Bloom Research Initiative and the Ohio Federal Research Network to the crafting and execution of its sustainable water systems model (SVWS) in Tanzania.

But as importantly, GWI has had success with gaining recognition as a thought leader. This recognition is gained through its innovative models and concepts, from the Sustainable Village Water System Model to the Private Sector Operator/Pricing Plan Model, the Infectious Disease concept to the Franchising for Water Services concept. Not measurable in the sense of revenues and F&A, these initiatives have helped gain recognition for OSU in Africa and in Washington, D.C.

GWI needs to know that the OSU leadership supports its efforts to brand Ohio State as the Land Grant University of the Future and to integrate its assets with those of others to solve pressing global issues at the nexus of water, food, energy, hygiene and sanitation.

Clearly, the GWI trend is not isolated. HABRI and OFRN, as well as new initiatives being assessed by the Governor-elects team, are requirements-based. We need to know that OSU leadership is supportive of creating the innovation cells to deal with these issues.

NOTE: MIT was recently ranked #1 in the Times Higher Education World University Rankings for Business and Economics. Two of the five key criteria were (1) the international outlook of its staff, students and research, and (2) the extent of its knowledge transfer.

### Challenge # 3 – Agreement on the Focus of GWI and Its Role as an Integrator of OSU Assets

When GWI was created it had three focus areas. In particular, during its first year it helped frame the Ohio State Field to Faucet Initiative and the State of Ohio Harmful Algal Bloom Research Initiative. Then it was told in 2017 that CFAES “owns Water”. GWI was instructed to stand down with respect to its Field to Faucet work until this issue is resolved.

But the fact is that water permeates across the OSU campus. Depending on how you count, there are 8-10 colleges directly linked to water issues at the State, Regional and Global Level. Having a neutral technology integrator that can work across all of the colleges and can support both internal and external customers is key if OSU is to play a leadership role in this domain. It is not an easy job as we have competing interests. But it is important that as we create another new Institute – the Sustainability Institute – that OoR and OAA give clear direction on how best to capitalize on OSU water assets and how best to capitalize on our institutes and colleges activities in this domain. OSU can and should be leading water issues at the State, Regional, and Global Level.

### Challenge #4 – External Funding of Systems Solutions

The GWI Team is quite adroit at business development and proposal formulation. As part of its Institute Proposal, it identified key proposal initiatives that it would pursue – initiatives with USAID that funded systems solutions and enabled collaborations with universities in Africa, e.g. the Higher Education Partnerships for Impact and Innovation. Unfortunately, those key proposal opportunities have been terminated within the federal government and the USAID Higher Education Technology Solutions Initiative was not renewed. Instead, three new smaller-scale programs dependent on funding from US Missions in Africa were initiated.

That means that to implement its core program, the Sustainable Village Water Systems Initiative, GWI has to secure multiple grants. Today, it is working on the first phase of that program. It has secured water grants from USAID and it is waiting on collaborative fundraising with WaterAid to complement each well with hygiene and sanitation for the village schools and clinics, as well as for new agricultural activities and extension agent support. GWI is also reaching out to private foundations per the report done for GWI by Geneva Global that highlights potential foundation funders with the hope they will be supportive of systems solutions that include market mechanisms.

The critical message is that the problems that confront water issues in the US and abroad require systems solutions, but the funders are still only funding pieces of the problem.

### Challenge #5 – Telling Our Story

I would suggest other institutes and centers at OSU face this same dilemma – how to get visibility at OSU and how to get our story out to the world. We recognize that there are many things going on at OSU. But the fact is that we get most of our recognition from external interfaces, not internal interfaces.

OSU has a story to tell about its international activities – including GWI – and we would hope that we will start to tell that story. Maybe this could take the form of an article a month in the Dispatch or Chronicle of Higher Ed, more frequent articles in the Lantern, stories in the OSU Alumni Magazine about projects and student activities.

I recognize the GWI Team is biased, but the fact is that everybody that has taken time to see and touch our projects has the same reaction – “this is incredible and we need to tell this story.” We are open to supporting any or all initiatives in this regard and when we get our Director of Communications and Networking Slot filled, we are eager to start sharing our story more widely.

## **APPENDIX A: GWI ACTIVITY HIGHLIGHTS FOR JULY – DECEMBER 2018**

### **FY19 Activities Capitalize On FY18 Foundation**

July -- GWI frames collaboration with World Bank, OIKOS, Tanzania MOW for cluster project in Singida Region of Tanzania (51 Combined Villages, 150,000 people)

July -- GWI with strong support from OAI and in collaboration with UDOM and ASC secure a Fulbright Scholar to work at OSU on AIDS/HIV

August -- GWI in collaboration with WaterAid issues call to donors to augment the GWI WADA project with an investment of \$2.5M for hygiene, sanitation and ag activities

September -- GWI gets formal request from KenGen Foundation in Nairobi to frame a pilot project for 4-6 SVWSs

September - GWI notified it had secured USAID Grant for GROWS -- focus on governance & private sector operating concepts for water services (TZ, Kenya, Uganda)

September -- GWI holds first Did You Know Session - Speakers from 8 OSU Organizations -- focus on Tanzania -- highlights interdisciplinary nature of issues

September - GWI host first ever FAC-EAB meeting

September-October -- GWI hosts OSU Gateway & Global Village Program in Tanzania. Site Visits lead to new student project collaboration -- capitalize on 40 GWI Field Sites

October -- GWI helps organize Water Conference in collaboration with Tanzanian Minister of Water -- Key Presentation by GWI – New Member of TZ Water Task Force

November -- GWI invited to be part of Purdue Led LASER Team for USAID -- long term solutions to core problems in Africa – Invited to present at Kick Off In Uganda

November -- GWI and World Serve secure grant from MPI Foundation and funding from WaterBoys as part of match for US AID-Coca Cola WADA Project

December -- GWI invited to be part of Kick Off Meeting for BRIDGE -- University of Florida initiative focused on coastal resilience - funding by EU and US companies

December - GWI Two Pilot Projects in Mughanga and Ghalunyunga secure water -- project funded by WorldServe, WaterBoys, Global Partners, WaterAid and GWI

December -- GWI submits Annual Report



## APPENDIX B: FACULTY AND RESEARCHER ENGAGEMENT

The initial activities of the Global Water Institute generated broad interest across the research community at Ohio State. The tables below list the faculty highlighted in our Institute proposal for each of the three focus areas of GWI: Field to Faucet, Wells to Wellness, and Coastal Resilience.

Many of these faculty are also engaged with other Institutes or Discovery Themes, which manifests their overall commitment to interdisciplinary work, solutions oriented activities, and collaboration among OSU faculty and colleges.

Initially, support was strongest in the Field to Faucet focus area. Most recently, Wells to Wellness, in particular our activities in Tanzania, have become the dominant focus area.

With the addition of GWI to both LASER and RTAC, USAID’s near-term and long-term transition of research to solutions initiatives, GWI is optimistic that our list of engaged faculty and affiliated faculty will grow over the coming year.

### Field to Faucet

Field to Faucet (F2F) was designed to integrate the assets of OSU to solve water problems. The initial focus was on the Great Lakes and responding to the Toledo Water Crisis. In response to that crisis, F2F and the Harmful Algal Bloom Research Initiative were framed – one for Ohio State and one for the State of Ohio.

Today, GWI is working with faculty on framing concepts for two of the most pressing water issues – coastal resilience and transboundary water issues.

The following list includes OSU faculty and research staff who were/are principal or co-investigators on funded F2F or related Ohio Department of Higher Education (ODHE) funded research projects. Four Ohio State colleges are represented. Today, Co-investigators on funded projects also include faculty from nine other Ohio universities as well as USDA. **Abbreviations:** College of Arts and Sciences (CAS); College of Food, Agricultural and Environmental Sciences (CFAES); College of Engineering (COE); College of Public Health (CPH).

| Name          | Dept./School/Division/Center                  | College | Role                    | ODHE or F2F |
|---------------|---|---------|-------------------------|-------------|
| Yu-Ping Chin  | Earth Sciences                                | CAS     | Co-I                    | ODHE        |
| Stuart Ludsin | Evolution, Ecology and Organismal Biology     | CAS     | PI                      | ODHE        |
| C. K. Shum    | Earth Sciences                                | CAS     | Co-I                    | F2F         |
| Yebo Li       | Food, Agricultural and Biological Engineering | CFAES   | PI                      | F2F         |
| John Fulton   | Food, Agricultural and Biological Engineering | CFAES   | PI, Co-I (two projects) | F2F         |
| Scott Shearer | Food, Agricultural and Biological Engineering | CFAES   | PI, Co-I (two projects) | F2F         |

| Name                 | Dept./School/Division/Center                               | College    | Role                    | ODHE or F2F |
|----------------------|--|------------|-------------------------|-------------|
| Greg LaBarge         | OSU Extension  | CFAES      | PI (two projects)       | ODHE        |
| Timothy Haab         | Agricultural, Environmental and Developmental Economics    | CFAES      | PI                      | ODHE        |
| Fuqing Xu            | Food, Agricultural and Biological Engineering              | CFAES      | Co-I                    | F2F         |
| Elizabeth Dayton     | Environment and Natural Resources                          | CFAES      | Co-I                    | ODHE        |
| Justin Chaffin       | Stone Laboratory   | CFAES      | Co-I (two projects)     | ODHE        |
| Steve Schwartz       | Food Science and Technology                                | CFAES      | Co-I                    | ODHE        |
| Kenneth Riedl        | Food Science and Technology                                | CFAES      | Co-I                    | ODHE        |
| Wu Lu                | Electrical and Computer Engineering                        | COE        | PI                      | F2F         |
| James Gregory        | Mechanical and Aerospace Engineering                       | COE        | Co-I                    | F2F         |
| John Lenhart         | Civil, Environmental and Geodetic Engineering              | COE        | Co-I (three projects)   | Both        |
| Allison MacKay       | Civil, Environmental and Geodetic Engineering              | COE        | PI                      | ODHE        |
| Christopher Weghorst | Environmental Health Sciences                              | CPH        | PI                      | ODHE        |
| Jiyoung Lee          | Environmental Health Sciences; Food Science and Technology | CPH, CFAES | PI, Co-I (two projects) | Both        |
| Manjunath Manubolu   | Environmental Health Sciences                              | CPH        | Co-I                    | ODHE        |

## Wells to Wellness

Nearly 1 billion people lack access to improved drinking water globally, and 90% of those live outside of urban areas. The GWI has framed its Wells to Wellness focus area to develop new models of development that create sustainable solutions with long-term economic, health, and environmental benefits. The initiative has the potential to improve water quality for over 5 million people, create a new generation of women entrepreneurs, train and prepare the workforce of the future for the advent of renewable energy, and conduct critical research activities that will protect and optimize precious land and water resources.

OSU faculty and research staff who are engaged in current Wells to Wellness activities or who are working with GWI on the development of future projects and proposals are shown in the table below. Eight colleges are engaged. **Abbreviations:** College of Arts and Sciences (CAS); College of Food, Agricultural and Environmental Sciences (CFAES); College of Engineering (COE); College of Medicine (COM); College of Veterinary Medicine (CVM); Fisher College of Business (FCOB); College of Education and Human Ecology (COHE); College of Public Health (CPH).

| Name                | Dept./School/Division/Center                            | College | Role  |
|---------------------|---|---------|---|
| Audrey Sawyer       | Earth Sciences  | CAS     | PI—hydrogeology project   |
| Amanda Robinson     | Political Science                                       | CAS     | Co-PI, collaboration  |
| Joseph Campbell     | Environment and Natural Resources                       | CFAES   | Fulbright   |
| Mark Erbaugh        | International Programs in Agriculture                   | CFAES   | Consultation, Joint Proposal Development  |
| Mark Weir           | College of Public Health                                | CPH     | Joint Proposal Development  |
| Tricia Allenby      | Department of Pathology                                 | COM     | Joint Project Development   |
| Robin Chenowith     | College of Education                                    | COHE    | Joint Project Development   |
| Casey Hoy           | Entomology  | CFAES   | Exploring collaboration   |
| Elena Irwin         | Agricultural, Environmental and Developmental Economics | CFAES   | Consultation, exploring collaboration   |
| Scott Shearer       | Food, Agricultural and Biological Engineering           | CFAES   | Consultation, exploring collaboration   |
| Don Hempson         | COE International, OIA                                  | COE/OIA | Joint Project   |
| Michael Hagenberger | Civil, Environmental and Geodetic Engineering           | COE     | Capstone advisor, trip leader to Tanzania   |
| Steve Ringel        | Dept. of Electrical and Computer Engineering            | COE     | Consultation, exploring collaboration   |
| Mary Rodriguez      | Agricultural Communication, Education, and Leadership   | CFAES   | Co-research lead on new USAID-funded grant; PI for project funded by InFACT and GWI focused on ag extension |
| Diane Gorgas        | Emergency Medicine                                      | COM     | Lead for new neonatal center in Dodoma  |
| Wondwossen Gebreyes | College of Veterinary Medicine                          | CVM     | Exploring collaboration/Cost Share of Key Staff   |
| Mike Oglesbee       | College of Veterinary Medicine                          | CVM     | Joint project development   |
| Raghu Machiragu     | TDA   | OoR     | Joint Project Development -- PI   |
| Keely Croxton       | Marketing and Logistics                                 | FCOB    | Consultation, exploring collaboration   |

## Coastal Resilience

The Coastal Resilience focus area is the most recent addition to the GWI portfolio and currently the least mature. Faculty have supported efforts to develop a research program for a UNESCO Coastal Resilience Collaborative through a collaboration with the Florida Earth Institute. The current focus is on the new BRIDGE Coastal Resilience Initiative being framed by the Florida Earth Institute.

Below is a listing of Ohio State faculty who are engaged in the development of research themes for the Coastal Resilience focus area or who have organizations with a focus on coastal resilience. **Abbreviations:** College of Arts and Sciences (CAS); College of Food, Agricultural and Environmental Sciences (CFAES); College of Engineering (COE).

| <b>Name</b>           | <b>Title</b>        | <b>Dept./School/Division/Center</b>                     | <b>College</b> |
|-----------------------|---------------------|---|----------------|
| Anne Carey            | Professor           | School of Earth Sciences                                | CAS            |
| Andrea Grottoli       | Professor           | School of Earth Sciences                                | CAS            |
| Craig Jenkins         | Professor           | Department of Sociology                                 | CAS            |
| Mark Moritz           | Associate Professor | Department of Anthropology                              | CAS            |
| CK Shum               | Professor           | School of Earth Sciences                                | CAS            |
| Sathya Gopalakrishnan | Assistant Professor | Agricultural, Environmental and Developmental Economics | CFAES          |
| Chris Winslow         | Interim Director    | Ohio Sea Grant and Stone Laboratory                     | CFAES          |
| Tijs van Maasackers   | Assistant Professor | Knowlton School of Architecture                         | COE            |

## APPENDIX C: FY18 AND FY19 BUDGET

### All Funds View GWI

|                                    | General Funds  |                |                          |
|------------------------------------|----------------|----------------|--------------------------|
|                                    | FY18           | FY19 Budget    | FY19 Actual <sup>1</sup> |
| Beginning Equity Balance           | 267,000        | 40,000         | 62,000                   |
| Total Sources                      | 965,500        | 1,066,000      | 458,000                  |
| Total Uses                         | 1,048,000      | 920,752        | 787,000                  |
| <b>Net Margin Before Transfers</b> | <b>184,500</b> | <b>185,248</b> | <b>(267,000)</b>         |
| Net Transfers                      | 122,500        | 140,000        | 60,000                   |
| <b>Net Margin After Transfers</b>  | <b>62,000</b>  | <b>45,248</b>  | <b>(327,000)</b>         |
| <b>Ending Equity Balance</b>       | <b>62,000</b>  | <b>45,248</b>  | <b>(327,000)</b>         |

<sup>3</sup>

|                         | OSP Funds |             |                          |
|-------------------------|-----------|-------------|--------------------------|
|                         | FY18      | FY19 Budget | FY19 Actual <sup>1</sup> |
| Total Sources           | 17,508    | 5,826,492   | 982,492                  |
| Total Uses <sup>2</sup> | 17,508    | 5,826,492   | 417,700                  |
| <b>Net Margin</b>       | <b>0</b>  | <b>0</b>    | <b>564,792</b>           |

|                                    | All Funds      |                |                          |
|------------------------------------|----------------|----------------|--------------------------|
|                                    | FY18           | FY19 Budget    | FY19 Actual <sup>1</sup> |
| Beginning Equity Balance           | 267,000        | 40,000         | 62,000                   |
| Total Sources                      | 983,008        | 6,892,492      | 1,440,492                |
| Total Uses                         | 1,065,508      | 6,747,244      | 1,204,700                |
| <b>Net Margin Before Transfers</b> | <b>184,500</b> | <b>185,248</b> | <b>297,792</b>           |
| Net Transfers                      | 122,500        | 140,000        | 88,000                   |
| <b>Net Margin After Transfers</b>  | <b>62,000</b>  | <b>45,248</b>  | <b>209,792</b>           |
| <b>Ending Equity Balance</b>       | <b>62,000</b>  | <b>45,248</b>  | <b>209,792</b>           |

<sup>3</sup>

<sup>1</sup> As of 11/30/18, including expense encumbrances

<sup>2</sup> Includes F&A

<sup>3</sup> Awaiting funding (\$560K) from: OAA, CFAES, and CoE



**GWI General Fund FY18 and FY19**

|                                    |    |                  |    |                  |    |                               |
|------------------------------------|----|------------------|----|------------------|----|-------------------------------|
|                                    |    |                  |    |                  |    |                               |
| <b>Beginning Cash (CF)</b>         | \$ | 267,000          | \$ | 40,000           | \$ | 62,000                        |
| <b>Sources:</b>                    |    |                  |    |                  |    |                               |
| MOU Support                        | \$ | 958,000          | \$ | 970,000          | \$ | 410,000 <sup>2</sup>          |
| SRE Grant                          | \$ | 7,500            | \$ | -                | \$ | -                             |
| Fisher GA support                  | \$ | -                | \$ | 96,000           | \$ | 48,000                        |
| <b>Total Sources</b>               | \$ | <b>1,232,500</b> | \$ | <b>1,106,000</b> | \$ | <b>520,000</b>                |
| <b>Uses:</b>                       |    |                  |    |                  |    |                               |
| Personnel (sal/ben)                | \$ | 838,000          | \$ | 710,752          | \$ | 740,147                       |
| GA Fee Authorizations              | \$ | 62,000           | \$ | 62,000           | \$ | 31,000                        |
| Supplies and Services              | \$ | 148,000          | \$ | 148,000          | \$ | 52,000                        |
| <b>Total Uses</b>                  | \$ | <b>1,048,000</b> | \$ | <b>920,752</b>   | \$ | <b>823,147</b>                |
| <b>Margin Before Transfers</b>     | \$ | <b>184,500</b>   | \$ | <b>185,248</b>   | \$ | <b>(303,147)</b>              |
| <b>Transfers Out:</b>              |    |                  |    |                  |    |                               |
| Faculty Grants                     | \$ | 120,000          | \$ | 125,000          | \$ | 85,000                        |
| Academic Support                   | \$ | 2,500            | \$ | 15,000           | \$ | 3,000                         |
| <b>Total Transfers</b>             | \$ | <b>122,500</b>   | \$ | <b>140,000</b>   | \$ | <b>88,000</b>                 |
| <b>Margin After Transfers</b>      | \$ | <b>62,000</b>    | \$ | <b>45,248</b>    | \$ | <b>(391,147)</b>              |
| <b>Total Year End Cash Balance</b> | \$ | <b>62,000</b>    | \$ | <b>45,248</b>    | \$ | <b>(391,147) <sup>2</sup></b> |

<sup>1</sup> As of 11/30/18, including expense encumbrances

<sup>2</sup> Awaiting funding (\$560K) from: OAA, CFAES, and CoE per MOU

**GWI OSP Grants FY18 and FY19**

| <b>Sources:</b>             |           |               |           |                  |                   |
|-----------------------------|-----------|---------------|-----------|------------------|-------------------|
| WADA                        | \$        | 17,508        | \$        | 982,492          | \$ 982,492        |
| GROWS                       | \$        | -             | \$        | 844,000          | \$ -              |
| Water Aid                   | \$        | -             | \$        | 2,500,000        | \$ -              |
| LASER                       | \$        | -             | \$        | 1,500,000        | \$ -              |
| <b>Total Awards</b>         | <b>\$</b> | <b>17,508</b> | <b>\$</b> | <b>5,826,492</b> | <b>\$ 982,492</b> |
| <b>Uses:</b>                |           |               |           |                  |                   |
| Direct--WADA                | \$        | 11,308        | \$        | 889,591          | \$ 396,000        |
| Direct--GROWS               | \$        | -             | \$        | 564,907          | \$ -              |
| Direct--Water Aid           | \$        | -             | \$        | 2,425,000        | \$ -              |
| Direct--LASER               | \$        | -             | \$        | 1,300,000        | \$ -              |
| <b>Total Direct Expense</b> | <b>\$</b> | <b>11,308</b> | <b>\$</b> | <b>5,179,498</b> | <b>\$ 396,000</b> |
| <b>F&amp;A<sup>3</sup>:</b> |           |               |           |                  |                   |
| F&A--WADA                   | \$        | 6,200         | \$        | 92,901           | \$ 21,700         |
| F&A--GROWS                  | \$        | -             | \$        | 279,093          | \$ -              |
| F&A--Water Aid              | \$        | -             | \$        | 75,000           | \$ -              |
| F&A--LASER                  | \$        | -             | \$        | 200,000          | \$ -              |
| <b>Total F&amp;A</b>        | <b>\$</b> | <b>6,200</b>  | <b>\$</b> | <b>646,994</b>   | <b>\$ 21,700</b>  |

<sup>1</sup> Projected total award amounts WADA=\$1M including FY18

<sup>2</sup> Direct expense and F&A as of 11/30/18, including expense encumbrances

<sup>3</sup> F&A amounts shown reflect total F&A on grant, not F&A allocated to GWI



Image credit: WaterAid Tanzania.

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***“Infectious disease exists at the intersection between real science, medicine, public health, social policy and human conflict.”***

***- Andrea Barrett (Author)***

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