Engineers Without Borders

Iowa State University

Spring 2020 Newsletter

History

In 2013, the Iowa State Chapter of Engineers Without Borders was paired with Ullo, a community in Northern Ghana. Since then, EWB-ISU has sent travel teams to Ullo for a couple of weeks during the Summer and Winter Break to assess the community's needs, monitor current projects, and implement new projects. Ultimately, we concluded that a water distribution system for the boarding high school in Ullo was the best option. A team in the Winter of 2017-'18 determined the best source of water, and the Winter 2018-'19 team completed the implementation of the system. In addition to monitoring the system, new projects have started in Ullo, including cookstoves, a clinic, shea-nut, and an agriculture and irrigation project.

ENGINEERS WITHOUT BORDERS USA

Our Current Projects

Clinic

The Clinic Project is one of our newest and largest projects. Our goal is to build a new clinic and improve healthcare for the people of Ullo and surrounding communities as well. Currently, the clinic in Ullo consists of five rooms across two buildings. The first phase of the clinic project consists of eleven rooms, with later phases adding around twenty more. This clinic is expected to serve 10,000-20,000 people. The Ghanaian government, the Ullo community, and the district have all expressed support for this project, and the government has committed to staff and furnish the new clinic.

Water Monitoring 2.0

In 2018 we implemented a water distribution system at the Ullo Senior High School. The system provides water to over one thousand students at the school. Already it has shown to have a positive effect on the students and the community. The water distribution provides them with safe drinking water and reduces the time spent each day traveling to collect water. As we are in the monitoring phase for the water distribution project, we are looking for ways we can improve upon the system so that it is functioning to the highest of its abilities and will continue to meet the community's needs.

Kitchen and Household Stoves

Ullo's existing stoves are inefficient in firewood consumption and produce a lot of smoke. We are working to design more efficient household and kitchen stoves to better the quality of life for cooks and lessen the environmental impact. Designs for the stove have been made and we hope in our next travel trip to implement and test the designs.

Rainwater Catchment and Irrigation

We are designing and installing a rainwater catchment and drip irrigation system for the school garden in Ullo senior high school. The rainwater catchment system will collect water during the rainy season to later be used for agricultural purposes. This project will both provide a means of crop production during the dry season and act as an educational tool for the Ullo Senior High School agriculture department. We plan to implement the rainwater catchment system during our next travel trip.

Ullo-Shea

The Ullo-Shea project is another one of our newer projects. The collection and selling of shea nuts is a large source of income for the women of Ullo. Currently, due to inefficient drying and storing methods, the shea nuts are not reaching their selling potential. We are working with the women of Ullo to develop methods to help extend the production period for shea nuts to help these women improve their business.

Domestic Project

A small team of EWB members has been working with the Ames community to find a local project for the club to get involved with. The domestic project is currently focused on building charging stations for the Food at First food pantry in Ames. These stations will allow Ames community members who may have difficulty accessing reliable power outlets to charge their electronic devices. Designs have been made and the charging stations will be built once we are back on campus!

Winter 2019-20 Travel Trip

This Winter's travel trip consisted of monitoring the Water Distribution system, goats, implementation of the kitchen stoves, dancing, and assessment for two of the new projects: the clinic and rainwater catchment. Potential locations for the new clinic were assessed for the size of land, access to power, and access to water. Ullo's current clinic has five rooms between 2 small buildings, and patients often need to be referred to a hospital that is far away. A site was selected by the Elders and is within reasonable walking distance of much of the community. The team also met with the Ghanaian Health Ministry (GHM), and they said they would do whatever they can to support this project. Existing clinics were also visited by the team to gather more information for the design of the future clinic. During the trip, a baby boy was born, and his mother ended up needing a blood transfusion. She was sent to the hospital, but anything could have happened. Dr. Maier said, "It reminds us of the preciousness of life and the importance of a new clinic for Ullo."

Information for the Shea Nut and Dam projects was also collected. George, a KNUST master's student who joined us this semester at ISU to pursue his Doctorate, showed the team hermetic grain storage bags that have two layers to kill bugs inside and keep bugs from burrowing in. These will hopefully help keep shea nut production safe after the growing season so they can continue to be made into shea butter and sold. The current dam was assessed for possible fixes that could help crops grow in the dry season since there are only a few months of heavy rainfall. The garden was also surveyed for the irrigation/agriculture project and rainwater catchment system. The team and Ullo community also met with Self Help International, an Iowa based NGO operating in Ghana, to assess community needs, the main problems being identified as access to water, access to credit, and access to markets.

As for the kitchen stoves, issues with the dimensions of the bricks made it so the kitchen stoves could not be fully implemented. However, the bricks were able to be made into some household stoves.

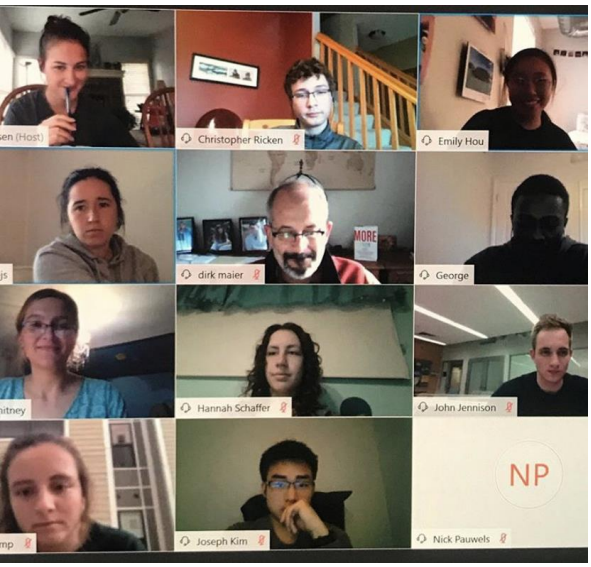
After much hard work, scrubbing tanks, fixing the chlorination system, and monitoring, the water distribution system is working very well and being maintained by community members Paul and Justin. We are planning to work on the automation of the chlorination system in the future.

Clinic Project

After the Winter 2019-20 assessment and much deliberation, our club decided to go ahead with the clinic as our next project during our partnership with Ullo. Due to this decision we are hoping to restructure the club so more than half of the engineering work is focused on the clinic. We hope to begin the implementation of the first phase (Pictured to the left) during the Winter 2020-2021 travel trip and have it completed in the next four years. The first phase will include consultation rooms, a maternity ward, and a pharmacy, among others. Our current plans are to increase the 5 rooms originally proposed to 11 rooms in the first phase and add about 20 in later phases to serve about 10,000 to 20,000 people.

Impact of COVID-19

Before Iowa State officially closed campus, our club decided we should not travel to Ullo as planned this Summer for both travelers' safety and especially the community's safety. As students headed off for spring break this semester, Iowa State, among many other universities nationally, decided to move classes online for the two weeks after the break and eventually for the rest of the semester. Unfortunately, this led to the postponement of our fundraising event Gathering for Ghana to the Fall. Although we cannot travel to Ghana ourselves this summer, we are working on ways to continue to make progress on our projects both domestically and in Ullo.



Club members have continued to meet virtually throughout the weeks, though WebEx and other mediums to continue work on the club's various projects. Email and social media have become our main form of communication within the club to keep members engaged. The club is keeping up the hard work to make sure the Ullo community can get what they need. Ghana itself has also closed its school and issued Stay at Home orders, and Ghana maintains a low number of causes of COVID-19. The Ullo community is, fortunately, safe and healthy! We are working on remote implementation plans for a living fence and concrete pads for the rainwater catchment project and pressure sensor and relay module installation for the water system.

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