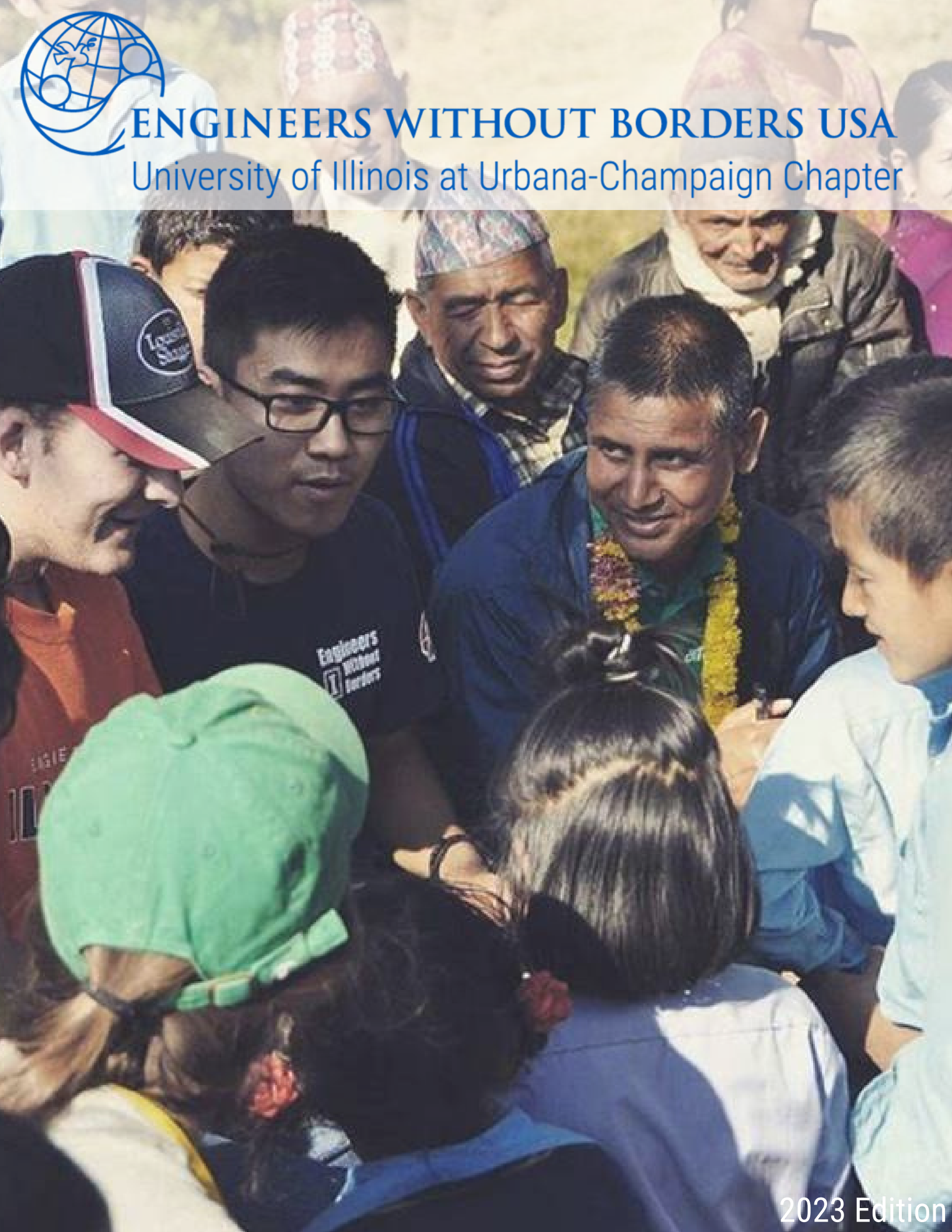




ENGINEERS WITHOUT BORDERS USA

University of Illinois at Urbana-Champaign Chapter



OUR CHAPTER

About Engineers Without Borders at UIUC

MISSION

Our chapter, which is involved in both domestic and international projects, aims to provide contextualized engineering solutions and sustainable technologies to alternatively developed communities. We utilize both technical and non-technical skills to improve project success for both the engineer and the client community.

EWB-UIUC is a registered 501(c)(3) nonprofit organization.

HISTORY

EWB-UIUC is one of the largest Engineers Without Borders student chapters in the United States. Although the projects constitute the heart and soul of our vision, our chapter looks forward to growth in many diverse areas. With completed projects ranging from water distribution to sanitation to structures, EWB-UIUC demonstrates resiliency and versatility when approaching engineering problems.

WHERE WE'VE WORKED

Ongoing and Completed Projects



WHO WE ARE

About the people in EWB-UIUC

INTERDISCIPLINARY

Our students collaborate on projects using a combination of civil, environmental, mechanical, and chemical concepts.

RESOURCEFUL

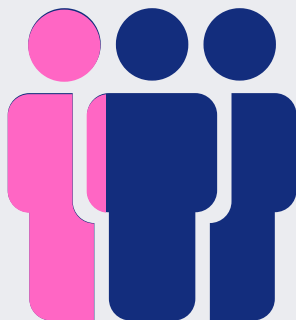
Our members take initiative, researching new concepts and working with variety of software and professionals to design and implement our projects.

COMPASSIONATE

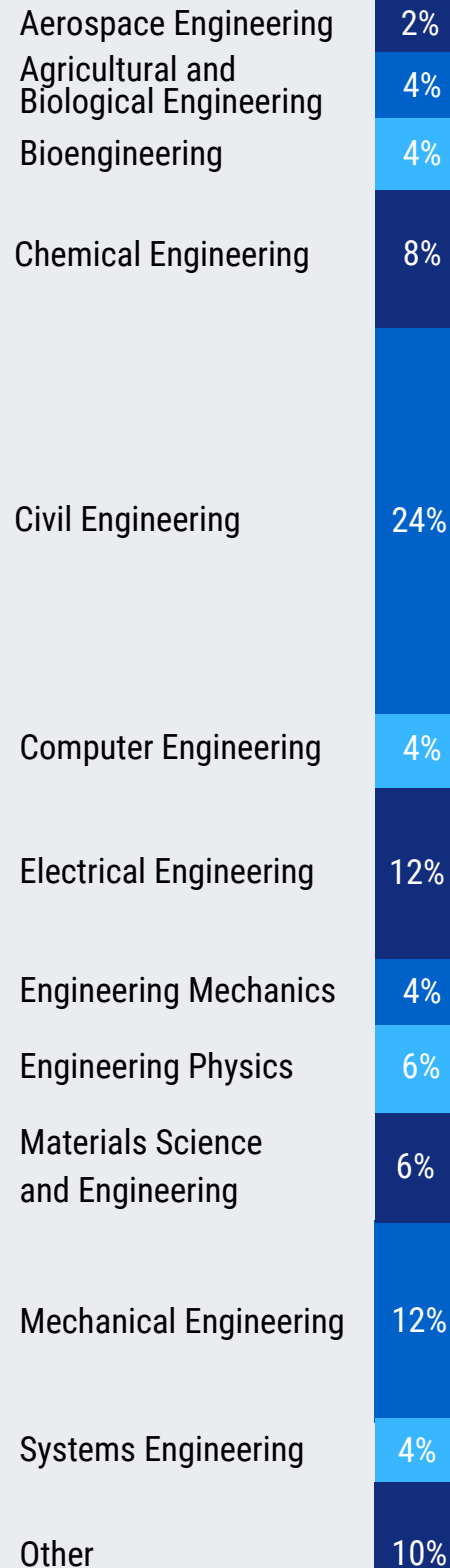
We apply our skills to serve those in need and find sustainable solutions which improve health and life in our communities.

DIVERSE

Our members come from many engineering majors and backgrounds, and we serve communities with a large range of lifestyles and cultures.



- 30% of our organization is women in engineering
- Women hold half of our project leadership and executive positions



Countries We Work In

Ecuador

The Republic of Ecuador was once home to a variety of Amerindian groups that were gradually incorporated into the Inca Empire. It is situated on the Ring of Fire and has thus experienced several significant and deadly earthquakes. The majority of the population speaks Spanish, but 13 Amerindian languages are also recognized. The country is very dependent on commodities such as petroleum and agricultural products.

Guatemala

The Republic of Guatemala, whose territory was once the core of the Mayan civilization, is the most populated country in Central America. Although the Mayan civilization had more than 20 languages, official transactions are conducted in Spanish. Southern Guatemala has 27 volcanoes, with volcanic eruptions and earthquakes taking heavy tolls on property and life. Guatemala is located in the tropics, so it experiences a diverse set of climates. The country has a relatively high rate of annual population growth, but its infant mortality and fertility rates are among the highest in Central America.

Malawi

The Republic of Malawi is a landlocked country in southeastern Africa that is over 118,484 square kilometers. It has spectacular highlands and extensive lakes, particularly Lake Malawi, which accounts for more than a fifth of the country's total area. Malawi's economy is based on cash crop and subsistence agriculture, and the population is growing rapidly despite having low life expectancy and high infant mortality rates. The country is working towards improving education, healthcare, environmental protection, and financial independency, but is faced with widespread unemployment.

Domestic Communities

Hopkins Park, Illinois

Hopkins Park is a village in the township of Pembroke inside Kankakee County. The community contains roughly 603 people and has a total area of around 9.7 square kilometers. During the Great Depression, lack of employment and inadequate housing in Chicago drove many African-Americans to Pembroke. However, the population has grown since then and is expected to trend upwards due to the installation of a gas pipeline. Pembroke has a rich history and strong farming culture, which is evident by the community members' efforts to work in harmony with nature to maintain a sustainable living.

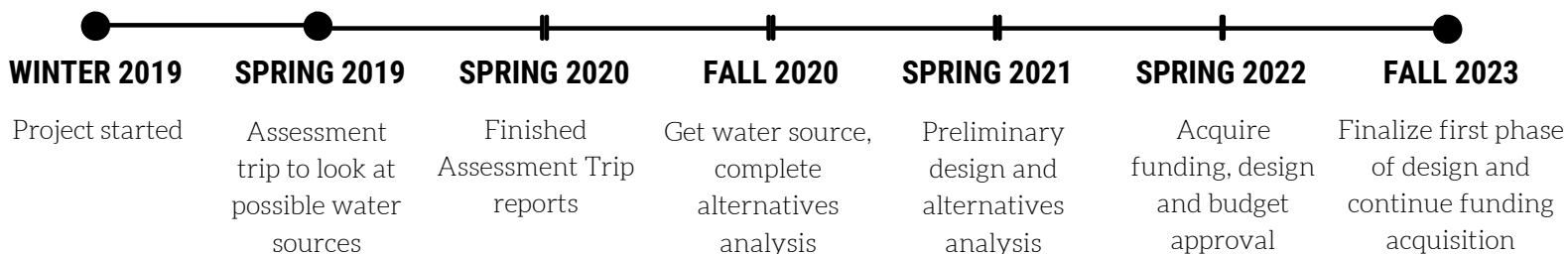
ECUADOR WATER DISTRIBUTION PROJECT

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EWB-UIUC has been working since January 2019 to implement a water distribution system in the community of El Guarango, Ecuador. In 2016, a major earthquake destroyed the community's water distribution system. They began importing water via truck from the nearby town of Rocafuerte, but our project is working to implement a clean and reliable distribution system to bring running water to the community.

In January 2020, the team traveled to the community to assess viable options for a sustainable water source, gather land surveying data, and collect various water samples. The water source comes from a newly built water treatment plant built by Engineers in Action in Ecuador, and the team is collaborating with three other EWB projects in the Rocafuerte area. The team recently completed their analysis of design alternatives, and is working on modeling the distribution system for implementation.



GUATEMALA SANITATION PROJECT

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The community of Paraje Los Méndez consists of 125 families and consists of a mostly agrarian economy. The school we are working with is the Official School of the Paraje Los Méndez Area, which was built 22 years ago. The bathrooms, built at the same time, have not been sufficiently upgraded since. The school currently has 135 students -- 71 boys and 64 girls.

After the bathroom's construction, a urinal unit was added. However, the unit lacks privacy or protection from the elements and the bathrooms do not have a sanitary hand washing station. The community has thought of a solution involving the construction of six new bathrooms. We updated this design to meet Guatemala regulations, increasing the capacity to 8 bathrooms: 3 toilets for female students, a toilet for female teachers, 2 toilets for male students, 1 urinal for male students, and one toilet for male teachers.



FALL 2020

Project started.

WINTER 2020

First assessment trip, completed project agreement and land surveying.

SUMMER 2021

Second assessment trip; gathered data & analyzed water sources for contaminants.

FALL 2022

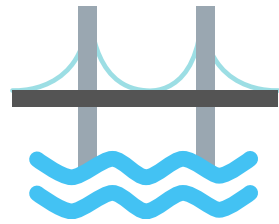
Implement sanitation system.

FALL 2023

Monitoring and Evaluation trip; examined the success of the system.

MALAWI BRIDGE PROJECT

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EWB-UIUC began their relationship with the Chilaweni community in January 2016. The objective to design a vehicular bridge at a critical access point within the community. In Chilaweni, Malawi, the monsoon season results in a loss of access to educational, healthcare, and marketplace resources. The flooding has also resulted in fatalities within the community due to unsafe river crossing conditions.

EWB-UIUC has previously identified three potential site locations within the community, with the goal of allowing the community to travel safely during the monsoon season. Currently, the team is designing a vehicular bridge for the highest priority site over the Mphati River. The design is informed by data gathered on a remote site assessment over July 2022, where geotechnical, topographic, and community survey information was found. The bridge is intended to span roughly 60 feet and incorporate scour countermeasures to increase resilience. The project team aims to implement in August 2023.



WINTER 2016

Relationship with Chilaweni community began

SUMMER 2016

First assessment trip to locate 3 potential sites

WINTER 2017

Second assessment trip; signed Memorandum of Understanding with community outlining project roles

FALL 2021

Determination of highest priority vehicular bridge site .

FALL 2022

Third assessment trip, gathered geotechnical, topographic, and community survey data to inform design.

FUTURE

Create final bridge design, with goal of implementation in August 2023.

HOPKINS PARK WASTEWATER TREATMENT PROJECT

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This project, located in Hopkins Park, Illinois, began in Spring 2019. It is a collaboration between the student team, professional engineers within an Illinois section of AWWA, a Senior Rural Development Specialist from RCAP, village officials, and community members of Hopkins Park. The team completed site assessments in 2019 and 2020 in order to solidify project objectives and gather information. The main objective is to repair the community's wastewater treatment plant, originally constructed in 1982.

The oversized system has deteriorated over time and is no longer operating in accordance with the original design. Therefore, we aimed to develop an understanding of how the current design differs from the original, and submitted a Preliminary Engineering Report. This included a background assessment of the system, financial and environmental constraints, and improved design suggestions that will better serve the community. Currently, a final design with detailed repairs and solutions is being developed.



SPRING 2019

Project started and first site visit completed

FALL 2019

Analyzed facility's original drawings

SPRING 2020

Completed project work plan and a thorough system analysis after a second site visit

SUMMER 2020

Commenced Preliminary Engineering Report & alternative design development

WINTER 2021

Preliminary Engineering Report was completed and stamped

SUMMER 2022

Complete budget proposal to the Illinois Environmental Protection Agency

FUTURE

Final design; submission to contractors

PREVIOUS PROJECTS

BIOFUEL ELECTRIFICATION PROJECT | ODISHA, INDIA | 2003 - 2005

Several villages in Odisha, India needed electricity. Therefore, this project, partnered with the local Badakamandara community, implemented a 7.5kVA generator, solar drier, decorticator, oil press, rice huller, spice grinder, and screw oil expeller in a new building. Basic training was provided to the local oversight committee with additional guidance from Oriya-speaking project monitors. 750 community members were directly impacted.

WATER DISTRIBUTION PROJECT | ADU ACHI, NIGERIA | 2005 - 2009

The village of Adu Achi, Nigeria historically relied on rainwater for their daily needs. Rain was scarce during the dry season and the river was both far and contaminated. Over the past decade, the Nigeria Water Project has worked with the local community to design and implement a sustainable water distribution system within the village. The system uses a borehole well and is gravity fed, allowing everyone to receive clean, reliable water.

WATER AND SANITATION PROJECT | NTISAW, CAMEROON | 2008 - 2013

The village of Ntisaw contains approximately 1,500 people in Cameroon, West Africa. Several streams run through the village which provide water for drinking, cooking, and cleaning. However, water testing determined that the streams were contaminated with fecal waste. This project aimed to provide clean water and sanitation to the Ntisaw community by performing tests and installing wells and pumps.

BIOSAND FILTER PROJECT | SOCORRO, GUATEMALA | 2008 - 2010

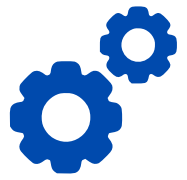
The village of Socorro, Guatemala consists of approximately 450 people. For years, residents faced gastrointestinal diseases from poor drinking water quality. Hence, biosand filters were implemented in households in around 7 communities to treat water. The communities received water mainly from the Chichoy River, although a few residences drew from wells. 8 out of 9 households said that they experienced an improvement in health after they began using the filters.

ENERGY /ELECTRICITY PROJECT | SOPPO LIKOKO, CAMEROON | 2013 - 2020

The village of Soppo Likoko contains 50 households with no access to electricity, causing lack of opportunity and a large outflow of locals. Therefore, this project aimed to construct and implement an electrical grid tie-in system to supply constant electricity flow. The project was completed in two phases: the first consisted of extending a local transmission line to the village and installing a transformer, while the second involved bringing electricity to each home.



WHAT GOES INTO A PROJECT?



AVERAGE PROJECT COST BREAKDOWN

ASSESSMENT

\$10,000-\$15,000

- Travel and Logistics
 - During in-person assessments and implementation we send a team of students to collect data, work on construction, and collaborate with community members
 - These costs include lodging, airfare, vehicle rental, as well as travel and EWB fees
- Testing /Site Assessments
 - Certain test kits and tools, or necessary lab work can also contribute to costs

IMPLEMENTATION

\$40,000-\$70,000

***VARIES BASED ON PROJECT TYPE AND SCOPE**

- Building Materials est. \$50,000
 - This includes rental of equipment such as drills, backhoes, and cement mixers
 - Main cost stems from building materials such as piping, concrete, tanks, or foundation materials, and can vary widely by scale of project and community
- Skilled Labor est. \$5,000
 - Masonry and concrete work requires hire of locals with experience, other unskilled labor is completed by community volunteers
- Travel and Logistics est. \$10,000

PROJECT CLOSEOUT

\$10,000-\$15,000

- Remaining contracting or EWB-USA obligations
- Travel and Logistics
- Necessary Maintenance or Repairs

OUR EFFORTS

Our teams spend hundreds of hours working on designs and research. During trips, all work is volunteer outside hired technical labor, and our communities also contribute labor and funds they can afford to the project. Projects work with a network of volunteers in engineering who mentor and give technical and community insight. We also have a team working to secure funds for travel through fundraising and grants. Travel is only conducted as needed, to oversee and aid in implementation and gather crucial environmental and community data to inform designs.

We want your contribution to have a clear impact, so your donations are prioritized for essential materials and implementation costs to construct our projects.

ANNUAL SPONSORSHIP PACKAGES

All donations are 501(c)(3) tax-deductible

BRONZE | \$500+

- Company Logo Displayed on the EWB-UIUC Official Website (ewbuiuc.org)
- Company Displayed in List of Sponsors in Internal Newsletter
- Receive Monthly Project Updates Highlighting Progress

SILVER | \$1000+

- Exclusive Spotlight Post on our EWB-UIUC Chapter Instagram Platform
- Company Logo Displayed at Recruiting and Fundraising Events
- Company Mention in Quarterly Alumni Newsletter
- All Bronze benefits

GOLD | \$2500+

- Access to a Resume Book of all Active EWB Executive Board and Project Members
- Large Company Logo Displayed on the EWB-UIUC Official Website
- Logo on our Member T-Shirt
- All Silver Benefits

PLATINUM | \$5000+

- General Meeting Opportunity with EWB Members During the Academic Year
- Formal Company Advertisement in our Internal and Alumni Newsletters
- All Gold Benefits

DIAMOND | \$10000+

- Invitation to EWB-UIUC Impact Board
- Feature on EWB-UIUC Official Website Highlighting Company Contribution to Chapter Mission
- All Platinum Benefits

CONTACT US

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