



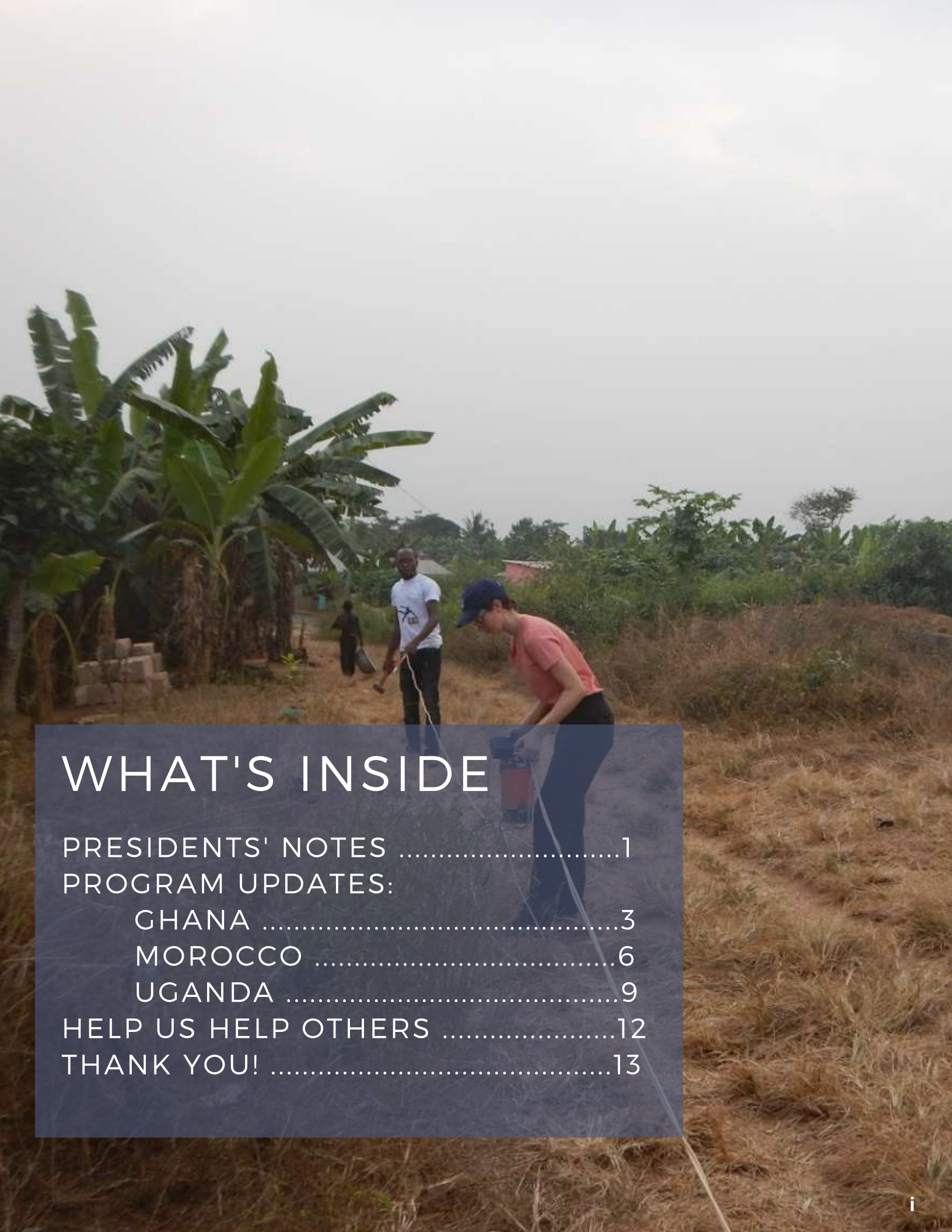
ENGINEERS WITHOUT BORDERS USA
Columbia University Chapter

SPRING 2021

NEWSLETTER



ENGINEERING WITH A PURPOSE



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PRESIDENTS' NOTES



DESU IMUDIA



**SOPHIE
REESE-WIRPSA**

Dear Friends of Engineers Without Borders,

On behalf of the Columbia University chapter of Engineers Without Borders, we would like to extend to you our warmest gratitude and thanks. The overwhelming support of our students, mentors, and professionals continues to contribute to success in our three international sustainable development projects. Inspired by the vast progress made by the scientific community over the past quarter, we continue to be reminded that great challenges can be overcome when we work together.

Continuing Education for Global Partnerships

With the guidance of our Education and Training Chair, Tobias Hoffmann, and the Education and Training Chair liaisons from each project team, we extended the continuing education series that started summer of 2020. During the spring semester, each team organized presentations surrounding: backgrounds of partner communities (culture and/or socioeconomics), proactive anti-racism, gender misconduct, and much more. As volunteers, engineers, and leaders we want to work to equip ourselves to actively dismantle oppressive systems and engage with consent and respect with our partners to create a more equitable future. Moving forward, we plan to continue to educate our members on numerous social and cultural issues facing our society and think creatively about the skills and assets engineers bring to the conversation. As we look towards the future, we hope to build leaders of tomorrow through engineering for humanity.

Virtual Engineering

Throughout the semester our project teams worked with their partner communities virtually. Morocco moved forward with remote implementation of the water distribution system relying on the strong ties and open communication that had been built with the community. Uganda moved their rural electrification project into monitoring and evaluation phases to focus on the long-term sustainability and financing of the project. Ghana partnered with the local water and sanitation committee to establish plans for expanding the current water system. We are very proud of our projects and their leadership teams during a challenging time in our world. Despite challenges posed by COVID-19 at home and, even more so abroad, our students engaged our partners and helped serve their communities' needs.

Community Education

In lieu of an annual conference, EWB-CU hosted a virtual event this semester, organized by our Events Chair, Alicia Garin Vila. Cheryl LaFleur, a Distinguished Visiting Fellow at the Center on Global Energy Policy at Columbia University and a previous commissioner on the Federal Energy Regulatory Commission, was our guest speaker. Many of our members were in attendance as LaFleur discussed her remarkable background and commitment to a more sustainable future in energy development. Her lecture highlighted the real and necessary connections between the realms of science, politics, and public policy. We appreciate her work and incredible efforts.

Campus Activities

In the final weeks of the spring semester, members of all three programs and EBoard came together to send off the seniors who have committed to years of service through our organization. We thank them for their expertise and guidance during the virtual semester. As progress is made in addressing COVID-19 on campus and globally, the Columbia community continues to make strides in bringing students and activities back to campus. We hope to more rigorously provide for our members and partner communities and look forward to welcoming returning and new members on campus in the fall as health guidelines allow.

Thank you again for your continued support of our chapter. The work of EWB-CU is making a positive impact, and the support you provide is instrumental to our success! We hope that you will continue to support the chapter as we lead it into the upcoming school year.

Sincerely,

Desu Imudia & Sophie Reese-Wirpsa

Co-Presidents of CU-EWB



GHANA

The Ghana Program began our partnership with the community of Amanfro, a rural village roughly 40 kilometers north of the capital of Accra, in 2014 with the joint goal of increasing access to and reliability of potable water for the village's population of about 3,000. Over the course of seven years, the community's water system has expanded to include four boreholes drilled on our trips in 2016 and 2018 and piping to two additional spigot locations.

In our second virtual semester and as more confident users of Zoom, the Ghana Program decided to use the travel limitations warranted by the pandemic to shift focus

from implementation and reflect on our role and impact as a western organization of students developing projects in a foreign community. We continued our series of educational lectures and seminars on colonization in Ghana and our role as an EWB chapter. Reflecting on the history of the Ghana Program not only allowed our members to gain deeper knowledge about our past projects and decisions, but to also assess past mistakes and failures. We identified that the main factors that contributed to failed projects in the past were a lack of community governance and financial structure. Thus, ensuring a strong water and sanitation community in



Amanfro with a robust financing system became our priority.

During our January 2020 trip, in conjunction with one of our partner organizations in Ghana – the Community Water and Sanitation Agency – we organized a community-wide meeting in which Amanfro elected a water and sanitation (WATSAN) committee to manage the maintenance, finances, and expansion of the water system. We are happy to report that after a year and a half, the committee members continue to enthusiastically carry out their roles. We have remotely partnered with the committee to collectively determine future project plans, and the committee has taken the lead on several repair and maintenance activities.

Last semester, we proposed a series of household biosand filters to address bacterial contamination of streams and hand-dug well sources that some members of the community still rely on. Our water team composed a comprehensive construction and maintenance manual for the biosand filters and our community

development team created a proposal with three options for financing schemes. However, the committee has decided that they would rather put their efforts and resources into developing new water sources and expanding access points. To this end, our water team shifted focus to designing extensions to the existing pipe network to provide additional access points. Nevertheless, we look forward to publishing our biosand filter operation and maintenance manual with the hope that it will be of help to other organizations or EWB chapters.

The pandemic has also given us the unique opportunity to take a step back and observe the WATSAN committee play a larger role in the community and fill positions EWB has previously held. Since implementing a regular bookkeeping system, the committee is now making a profit from the water sources and using the revenue to invest in maintenance and pay off debts. Additionally, the WATSAN committee has been successful in negotiating lower rates with their electricity provider and contacting



contractors to repair damaged structures. From our regular interactions with Amanfro, we have identified a growing capability to take full ownership of the project. At this time, we feel optimistic about soon beginning the process of closing out the Amanfro Water Project. We are hopeful that we will be able to travel to Amanfro soon to complete unfinished repairs on our infrastructure and ensure that there is reliable access to potable water at all our existing sites. In the meantime, the Ghana Program will continue to maintain communication with the community to preserve our relationship and support their efforts to achieve sustainable access to clean water.

Authors:

Joyce Liu & Zena-Marie Gonzalez
Ghana Program Managers



MOROCCO

The Morocco Program began in 2011 when the Columbia University Chapter was contacted by a Columbia alumnus and Peace Corps Volunteer stationed in Ait Bayoud. The Ait Bayoud Development Association was looking for a group to help develop transportation infrastructure in their commune. This initial connection brought our program in touch with the communities of Ait Bayoud and laid the foundation for our

collaboration. After our club completed a bridge in 2013, Izgouaren and Ilguiloda reached out to us for help solving their lack of a clean water source, which is how the current project began. After assessing the feasibility of working again in the region in 2014, our student group began the design and implementation of the water distribution system. We collaborate with the community and have been fortunate to



have the help of professional engineering mentors and the guidance/support of Columbia administrators and faculty. In the summer of 2019, we successfully implemented the largest scope of work in our club's history: we built the first half of our solar-powered water distribution system and brought running water from a well we drilled to Ilguilouda, the closer of the two villages to the wellsite.

Entering a second semester of online club activities, the Morocco program was able to sustain enthusiastic engagement from its members - both new and returning - by brainstorming and creating tasks that could be conducted remotely while still advancing the development of our water distribution system in Ilguiloda. Further, the continuation of the remote semester required us to establish more clear and consistent communication patterns with community partners. Lastly, the Morocco program's remote implementation plan (outlined in the Fall 2020 semester) was steadily seen

through with the help of in-country collaborators and translators.

The Morocco Program took the semester's virtual format as an opportunity to immerse members in the multiple facets of the team's project by holding general body meetings on a broad range of instructive topics, from fluid dynamics to project management. These meetings helped our newer members, who did not have the opportunity to travel, to build a holistic understanding of the program's various subteams. In addition, our program was able to introduce and encourage discussions about sociocultural considerations in engineering through our Continued Education (CE) sessions; topics this semester included culturally conscious design practices and digital colonialism. CE Sessions have received an overwhelmingly positive response from program members, and we look forward to unpacking even more complex and relevant topics related to humanitarian engineering in the coming year.



Our remote implementation plan outlined in the prior semester focuses specifically on community surveying, water quality testing and repairs to our bridge project, which was completed in 2014. This semester, we were able to set up a survey system that could be conducted free of internet connection by volunteers in-country as well as begin sourcing materials for bridge repairs.

Given the subteam-specific focus of remote implementation, we decided to have other teams within the program collaborate with our Bridge and Community Development leads to execute these plans more efficiently. This cross-subteam collaboration proved to be an informative and highly effective approach to ensuring the tasks in our remote implementation plan received due attention

Authors:

Ike Njoroge & Khadija Hanif

Morocco Program Managers



UGANDA

The Uganda program of CU-EWB began in 2008 with the Multifunctional Platform (MFP) projects in 8 rural communities in eastern Uganda. These MFPs were built to make the processing of grains and other crops more efficient for the agricultural communities. During this project, CU-EWB Uganda began our partnership with Pilgrim Africa. Alongside Pilgrim, we have implemented a Rainwater Harvesting project at the NGO's Beacon of

Hope Secondary School in Soroti. After the completion of both of these projects, CU-EWB Uganda and Pilgrim Africa have embarked on a Rural Electrification project in Otubet Parish. As of May 2021, CU-EWB Uganda has implemented systems at two primary schools, the community medical center, and 33 businesses in the town center. These systems, installed in 2018 and 2019, power lighting at the businesses and



lighting and power sockets at the primary schools and medical center. The primary schools and the medical center were also provided laptops, with the medical center receiving an electric microscope. During the first implementation trip in 2018, the benefactors of the project elected a governing board to oversee the system.

The Rural Electrification project is currently in the monitoring and evaluation phase of our project. After traveling during the summer of 2019, our team has decided to take a step back from implementation in order to focus on community development to ensure the financial and social sustainability of the project. The most challenging aspect of our project has been conveying the importance of the community contribution mandated by EWB-USA. The community contribution is an EWB-USA policy that requires the community to “buy into” the project and raise 5% of the implementation costs. This contribution also prepares the community to raise funds when the system inevitably needs repairs. In the

past, the program boards have not collected this contribution, leading EWB-USA and our current board to the conclusion that the project, as it stands, is not financially sustainable. Additionally, after our most recent trip, the system that was implemented in 2019 has not been functioning as designed. Over the next couple of years, the Uganda program will be focusing on repairing the existing systems as we gather more information on how people are actually using the system and working on collecting the accumulated community contribution from the past few years, all while conducting an evaluation of the state of the project to determine whether or not the project should continue implementation. While we have certainly run into many challenges, we are learning from our mistakes and working towards a more sustainable future for the project.



The COVID-19 pandemic has granted CU-EWB as a whole a chance to reflect inwards and reexamine our own motivations and world views. The 2021 Uboard is in a unique position as only one member has travelled to Uganda; therefore, our number one priority has been preparing younger club members with the knowledge they need to lead the club in the future. We used this past semester as an opportunity to educate new members and expose them to issues past teams have encountered in-country. One of the most relevant issues we covered was Ugandan politics, particularly in light of the recent election in Uganda. We devoted multiple general body meetings to learning about the history of Ugandan politics and discussing how this knowledge should affect our work in Otubet. In terms of the project, we have kept constant communication with our in-country partners through phone calls and emails to remotely monitor the system and other aspects of the project, including the status of COVID-19 in the Teso region.

Another focus of our board this semester has been planning a remote monitoring and evaluation trip by Pilgrim Africa and CU-EWB's trusted contractor who has been actively involved in the project since the beginning of implementation 2018. This evaluation data will give the Columbia team insight into the technical faults of the system and allow the team to monitor the level of community support that remains. As we maneuver through these next phases of the rural electrification project, we hope to see a high level of support that would allow us to continue our strong partnership with the Otubet community.

Authors:

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Uganda Program Managers

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GET INVOLVED!

We are always looking for student members and professional members alike! Visit our website www.cuewb.org for our meeting times and locations this semester. We are in need of both technical and non-technical expertise; you don't have to be an engineer to join Engineers Without Borders.



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THANK YOU

FOR YOUR SUPPORT!

CU-EWB's work is truly a group effort. Our programs have done wonderful work over the years, none of which would have been possible without our invaluable contributors, mentors, volunteers, and supporters. We would like to thank all of our members, mentors, and supporters that ensure the success of our projects. We would also like to thank everyone who supported and volunteered for our many events.

Finally, we would like to thank the generous sponsors and grants whose financial support makes our ongoing work possible:



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