



ENGINEERS USA
WITHOUT BORDERS
Columbia University Chapter



FALL 2010



UGANDA



INDIA



GHANA

CONTENTS

- 2 Letter from the President
- 3 Advancing the Pilot Program
- 4 Directing Focus to Water Technologies
- 5 Improving Quality of Life Through Improved Design

PROGRAMS

UGANDA

Program Manager
Alison Ferris
amf2172@columbia.edu
Meetings: Fridays 5:40pm, 834 Mudd

INDIA

Program Manager
Matt Capetola
mrc2128@columbia.edu
Meetings: Wednesdays 8:10pm
644 Mudd

GHANA

Program Manager
Clayton Dahlgren
cjd2126@columbia.edu
Meetings: Wednesdays 10pm
304 Hamilton



Dear Friends of Engineers Without Borders,

It is a pleasure to publish this issue of our newsletter in order to better inform our alumni, colleagues, and friends about the achievements, progress and activities of our three programs. We hope you enjoy the contents of this newsletter and even more so hope you can share with us your own experiences with and passion for development work.

CU-EWB provides a unique opportunity for students to leverage their skills and passions to provide sustainable engineering solutions for the communities that we work in. Each of the three programs, India, Ghana, and Uganda, partners with local NGOs to find out what the unique needs of the village are and how we can go about finding solutions. Past and ongoing projects have included installing a microhydro power generator, a diesel engine modified to run on vegetable oil, a ventilated pit latrine, improved wood burning stoves, and rain water harvesting systems.

CU-EWB also strives to support the mission of sustainable development in the US by being an on-campus advocate and sharing experiences with other EWB chapters. This past year our members attended the EWB International Conference in Denver, Colorado where we attended workshops such as "Community Voices – Effective Partnerships" and "Cross-Cultural Engineering: Science, Hybridity, and the Human Experience." In addition, our Uganda program had the opportunity to lead a session entitled "Sustainable Solutions in the Developing World: Tackling Multiple Disciplines in an Evolving Engineering Profession."

Being a part of EWB has truly enriched my Columbia experience. I look forward to the coming years to see the new heights this organization reaches.

Sonal Bothra, President
CU Engineers Without Borders

GET INVOLVED

As one of the largest student groups at Columbia University, CU-EWB plays a significant role in on-campus advocacy of international development causes and the promotion of sustainable technologies. To get involved email cu-ewb@columbia.edu or visit cuewb.org For specific projects, contact individual programs.

As a non-profit organization, we rely upon the generous donations of our associates in funding the prototyping of project designs, promotion of sustainable development in the Columbia community, and implementing projects that have real impact on the welfare of the communities we work with.

If you are interested in donating to our development mission, we encourage you to refer to the section below.

DONATE

CU-EWB accepts check by mail at:

EWB - Columbia University
610 S.W. Mudd, MC 4709
500 West 120th St.
New York, NY 10027

Credit card payment can be made at:

[www.ewb-usa.org/
chapters.php?ID=348](http://www.ewb-usa.org/chapters.php?ID=348)

EXECUTIVE BOARD

Sonal Bothra	President
Sarah Glazer	VP, Edu. & Training
Bruce Garro	VP, Funding & PR
Bethany Schneider	Secretary
Kevin Ma	Treasurer

UGANDA



Usuk engine operator mills cassava and generates electricity using the MFP

UGANDA PROGRAM STAYS ON COURSE WHILE BREAKING NEW GROUND



Advancing the Pilot Program

Over the last three years, the main focus of the CU-EWB Uganda Program has been the implementation of a series of Multifunction Platforms (MFPs) in the Soroti district of Uganda. Working closely with the indigenous Ugandan NGO Pilgrim, we have installed two MFPs in the farming co-operative network supported by Pilgrim for the resettlement of farmers displaced by regional conflict, cattle raids, or severe flooding. MFPs are stationary diesel engines that provide important mechanization for agricultural processing, electricity generation, and water supply systems, often resulting in significant income generation and reduction of repetitive manual labor. Pilgrim also runs Soroti Municipal Secondary School, a school of approximately 500 students, nearly all of whom have come from internally displaced persons camps or were formerly child soldiers. CU-EWB Uganda recently took on a second project with the goal of improving the school's access to clean, reliable drinking water through

the design and implementation of multiple rainwater harvesting systems.

This past summer, a group of students from CU-EWB Uganda returned to Soroti to complete assessment work for the program's two projects: the MFP pilot program and the rainwater harvesting project. Under the guidance of a local electrician, CU-EWB Uganda aided in the addition of Permanent Magnetic Generator (PMG) attachments to each MFP engine and helped construct small electrical systems containing outlets, lights, and switches for each engine site in the Orungo and Usuk farming cooperatives. Qualitative MFP assessment work was also done by the team through multiple community discussions. We conducted assessment work at Soroti Municipal Secondary School to obtain topographical data of the area, water supply and demand data, campus building dimensions, and water quality results.

This semester, CU-EWB Uganda is hoping to finish the design of three rainwater harvesting systems for the Soroti Municipal Secondary School campus and to design two supplemental devices for the MFP project: a vent to contain excess flour from the MFP mill attachment and an adjustable, smart, 12V lead-acid battery charger.

INDIA

Villagers in Orissa erecting an electric pole used to hold wires extending from the microhydro generator powerhouse



DECISION-MAKING AND NEW DIRECTION FOR INDIA PROGRAM



Directing Focus to Water Technologies

For the last year, the CU-EWB India Program had devoted its efforts to the development of an improved cookstove prototype. We've since concluded that solving this complex engineering problem is not a feasible project for an organization of our size. We remain committed to working on projects whose sustainability is guaranteed, and we will be shifting focus to other types of engineering and sustainable development issues that India faces. Our partnering community in Purnaguma will be left in good hands as we relocate to the city of Bhopal in the state of Madhya Pradesh. Through the continuation of the communities collaboration with our partner NGO, Gram Vikas, it will continue to benefit from the product of our previous project, a microhydro electric generator.

A leading development issue in India that we've since decided to address is the prevalence of contaminated

municipal drinking water. With the guidance of the EWB India national chapter, CU-EWB India has identified a community in the city of Bhopal in the state of Madhya Pradesh with great potential for collaboration and a need for improved water potability. Additionally, We've established a partnership with a local student group called EWB MANIT who have articulated interest in taking on a water filtration and distribution project in an area of Bhopal significantly affected by water contamination. In order to solidify the potential partnership and assess the feasibility of a water filtration/distribution system in the proposed area, CU-EWB India is considering all facets of such a project—from water quality data to local social dynamics.

In order to start our work in Bhopal with EWB MANIT, CU-EWB India is spending this semester reorganizing and re-applying with EWB-USA. Accordingly, our focus is on ensuring a smooth transition and exploring the potential of this new project. We are extremely excited to be working in a new area, but have a lot of work ahead of us. Defining strong partnerships with local organizations and the community in Madhya Pradesh will be the key to ensuring the success of our future endeavors.

GHANA



Local children watch as CU-EWB members Claire Wang and Lucy Stowe test contamination levels in waste water

GHANA PROGRAM CONFRONTS WATER ISSUES



Improving Quality of Life through Improved Design

The CU-EWB Ghana Program returned to Obodon, Ghana this summer to construct a source-separating latrine and carry out pre-assessment for a planned water distribution project. CU-EWB Ghana is working with the community to increase the availability of water throughout the village by means of designing a water distribution system. Additionally, the team is researching safe and sustainable options for water filtration to reduce the potential for spreading pathogens within the community. The program intends to return to Ghana in spring to continue testing on the first latrine in anticipation of later building a second, improved version. We will also continue water testing and planning for construction of the water distribution system.

Over the past year, Ghana Program has been de-

signing a source separating latrine intended to reduce the appearance of waste pathogens and create compost fertilizer for use by community farmers. With the help of INOCOM construction company of Ghana and the community of Obodon, the latrine was completed successfully and is currently in use. The design was awarded a stage-1 P3 grant worth \$10,000 which contributed toward the summer implementation. Additional funding was raised through a collaboration with Columbia professor, and CU-EWB Ghana mentor, Kartik Chandran, with whom the program co-hosted the New York City Water Summit, a conference which brought together academic researchers concerned with water issues.

Over the coming semester, the Ghana Program will be finalizing designs for the second latrine, analyzing the results of samples and measurements taken from the first latrine, and finishing the design of the water distribution system. We look forward to continuing our collaboration with the community of Obodon and working to improve the quality of life of its residents.