Volume 2 Fall 2007

ENGINEERS WITHOUT BORDERS
at the University of Pennsylvania

PENN | EWB

Inside this Issue:

PennEWB Board

President:
Daniel J. Wallman

International Projects:
Matthew Owens

Finance:
Thomas Macrina

Community Outreach:
Jay Parekh

Public Relations:
Sarah Casey

The Hub:
Alex Yen

Editorial Team

Editor-in-Chief:
Sarah Casey

Acknowledgements:
Aiwen Xu
Hon-Leung Wong

Welcome to the second edition of our newsletter, where our more recent work is publicized and our future endeavors are laid out. As always, we welcome any contribution or advice that you may have, so feel free to share your thoughts.

Over the last year, PennEWB has taken great strides in all areas of its organization. Whether it was implementing projects, finding and assessing new projects, or even making new relationships, we have grown as both individuals and as a family. Furthermore, we have been commended by EWB-USA for our outstanding work in Latin America. PennEWB has made efforts to collaborate with other universities via local and regional conferences, providing a set stage for our members to flourish. We owe these accomplishments to our members, advisors, and sponsors and hope to continue this growth throughout the coming school year.

Armed with new inspiration and innovation from both old and new members, I expect another great year for PennEWB. On our project side, look forward to both practical and innovative ideas, locally and internationally, as well as integrating projects into the classroom. We hope to strengthen our foundation at the university level as well, with both the student body and the faculty.

Throughout this issue, and each issue to follow, you will find material not only on our past and present project but also on sustainable development and its applications throughout the world including our own community at Penn. I can only hope that this serves as a medium by which we can educate and intrigue our readers in sustainable development.

We look forward to seeing you throughout the year. On behalf of the 2007-2008 PennEWB membership,

Daniel Wallman, President
PennEWB

Mission Statement:
~ Mirroring EWB-USA's mission, PennEWB's mission is to partner with developing communities worldwide to improve their quality of life through implementation of environmentally, socially, and economically sustainable engineering projects. Additionally we aim to raise awareness of problems faced by developing communities by engaging in educational projects on campus and in the Philadelphia community.

Local Committee Update

Jay Parekh

While the most visible and publicized aspect of Engineers Without Borders is the international project trips, another integral part of the club's activities takes place within Philadelphia. Educating the community about sustainable development and implementing such projects is a priority both overseas and within our own borders.

This year, EWB's Local Committee will continue its relationship with Saul High School in Philadelphia. Continuing their theme of biologically sourced fuels, their latest interest is biodiesel. The local committee will work with students to produce biodiesel, which they will be able to utilize in their fleet of farm vehicles. Virgin (new) vegetable oil will be converted into biodiesel that is fully compatible with all diesel engines. Once a week, EWB members work with Saul students after school to learn the chemistry of this "green" fuel and participate in the design and construction of the converter. Ms. Naugle, a Penn alumna, is the Saul teacher working with the Local Committee on this project. In addition to promoting the Biomass club, Ms. Naugle allows Penn EWB students to come in during one of her classes each week and teach the students about sustainable development.

EWB hopes to create thriving partnerships with many communities through its aim of fostering sustainability –from Philadelphia to Honduras and the rest of the world.

International Committee Update

Matthew Owens

For the coming year, PennEWB's first international priority will be the implementation of a water system for Kob/Tudig, Cameroon. Following a successful assessment, we are moving forward with plans to send an implementation team in late December. Anyone interested in participating in the travel team should download an application from our website by September 13th. If you can't travel or miss the application, keep in mind that much of the important work for this project occurs on campus, so if you want to contribute, just come to committee meetings.

Additionally, following the completion of our work with Terreritos, a group is evaluating options for a third project with our NGO partner FUCOHSO in Honduras. Potential focus areas include water distribution, biofuel production, or repair of damage by Hurricane Felix.

Even as we move forward with these projects, it is our goal to support members in seeking out innovative solutions to problems encountered by developing communities. In this effort, we have the support of SEAS and Weiss Tech House to provide resources as well as an academic framework, such as an independent study or senior design project, to teams of students interested in pursuing research or design related to sustainable development. We hope that such work can provide the basis for future PennEWB projects. So, if you have an idea you would like to investigate further, please attend an international committee meeting so that we can discuss options.

With regard to selection of future projects, the competitive presentations last year were a great success, but it also became clear that groups require varying amounts of time to prepare a complete proposal. For this reason, we will from now on allow a project team to submit a proposal at any time. The proposal will be reviewed by a committee of EWB board members and Penn faculty. If accepted as a PennEWB project, the club will begin seeking corporate sponsorship and establish a schedule for implementation. For more details, please email pennewb@seas.upenn.edu

Homestay with a Honduran Host Family

by Haresh Tilani

I will have to admit that the first few minutes of my first night with Don Federico and his family, who were hosting me, were awkward. Our lack of competency in each other's native languages meant that conversation was almost impossible. After a few silent minutes, I suddenly remembered that I had a pocket translator with me. I whipped it out and began reading all the Spanish phrases I could find. I am sure they were wondering why I was telling them that I had 'nothing to declare', but it worked like a charm. They erupted in laughter with chuckles so infectious that I could not help but join in.

Time flew by, and it soon was late. I was very courteously shown to my room, which was a small part of their house cordoned off by a curtain. There was a simple bed and a table, and the room was illuminated by a single candle. As I unpacked, I occasionally noticed the curious faces of the kids trying to peep in around the curtain. I gestured for them to come in, but they often hid the moment they saw me become aware of them.

It was only in the light of the next day that I saw what the house really looked like. There was a main structure with 2 rooms and kitchen. The walls were made of mud-bricks layered with a smooth mix of cement and limestone. In front of the house were makeshift zinc shelters where washing of dishes and clothes were done. It was also for washing one's self, as I soon found out when I woke up at around 0600 hrs the next day. I felt it was early, but by then the family was already hard at work. The men were off to the fields, and the ladies were taking care of the household. The moment I stepped out of my room I was greeted with wide smiles and greetings of "Buenos Dias", which I fortunately understood. This was the first part of what was to become a daily routine. Every morning, after waking and freshening up, I would try to make some conversation with the family before having a hearty Honduran breakfast of tortillas, beans, eggs, cheese and coffee. The food was amazing and the portions kept growing as each day passed, probably because they could tell how much I enjoyed it. As many tortillas as one could have had in his life, nothing beats a freshly hand-made authentic one prepared in the traditional way.

Haresh with his host family

I would then leave the house to join the rest of my group members for the day's work before returning at night. However, during the day, as we moved around the village, I often heard my name being called, only to turn and see one of my host family members smiling and waving excitedly. This prompted me to learn the names of every member of the family, which I gradually did, as well as brush up on my Spanish. I think my host family was delighted because their faces lit up whenever we had successful conversation.

I stayed with my family for almost a week, and save for the first 30 minutes, I never felt uncomfortable. While this was a relatively short period of time, it still gave me an important insight into the life of rural villagers. Looking back, choosing to stay with a host family was the best decision I could have made because it blurred the line between our team and the villagers, and made our interactions that much more personal.

I had become very fond of my host family, and this was echoed by my other team mate who stayed with the same family. Before we officially left the village, we both presented them with small tokens of our immense appreciation. I even managed to extend my sincere thanks to Don Federico and his family in Spanish, which by that time, comprised more than just a simple 'Gracias'.

"Ayuda al Pueblito Terreritos"

Jennifer Ehrich

The ideas and initiatives of Penn Engineers Without Borders have begun to attract the attention of not only college students, but high school students as well. This past July, at the Summer Academy of Engineering and Applied Science (SAAST) held at the University of Pennsylvania, a group of six high school students expanded on the work of Engineers Without Borders, specifically regarding the recent Honduras project. These students were enrolled in a college level course entitled "Technology and Democracy", taught by Dr. Foster. In this class, the students learned about the impacts of new technology domestically as well as internationally.

The final project for this class was entitled "Ayuda al Pueblito Terreritos", or "Helping the Town of Terreritos". Terreritos, a small town in Honduras which PennEWB worked with, is an hour's drive from the nearest municipal public health clinic. The clinic is not open twenty-four hours, and is not easily accessible due to inadequate transportation and other uncontrollable factors such as flooding. The citizens of Terreritos often need simple medical care, yet cannot get it because of their limited access to the health care at the clinic. People suffer from health complications such as diarrhea, fever, or respiratory infection simply due to lack of basic medical knowledge.

Dr. Foster and students.

"Ayuda al Pueblito Terreritos" proposes to use telemedicine to improve the current health situation. This telecommunication method would facilitate the flow of health information to the village from the health clinic. Basic medical information such as advice on alleviating symptoms of common ailments could be obtained extremely rapidly via cell phone. The caller would navigate through an automated response system until his or her ailment is correctly identified. At that point, a general home remedy audio file would be played. If necessary or in an emergency, a trained professional at the clinic could answer more specific and detailed questions about more serious ailments. The trained professional would also be able to determine if a trip to the health clinic is necessary. This system would help citizens of Terreritos recover more quickly, as well as eliminate unnecessary trips to the health clinic.

This project is economically sustainable and feasible. Initial costs, including travel, equipment purchases, and voice acting, would be paid for by grant donors such as the Ford Foundation or USAID. Health and ICT training for select villagers could be provided by volunteer services such as NGO Proyecto Aldea Global. Regarding automated menu system, Voxeo Evolution offers free software called Prophecy that is able to accomplish these tasks at no financial cost. A very small tax may be collected from the villagers in order to cover the sustaining cost of cell phone use.

"Ayuda al Pueblito Terreritos" would enhance the communication between the village and the municipal public health center. This system would reduce the number of illnesses due to poor communication and lack of medical knowledge. The villagers would become more confident in the western remedies the system provides, and soon they would be able to restore themselves to proper health. Collaboration among villagers, donors and volunteers would surely lead this proposed project, "Ayuda al Pueblito Terreritos", to success.

"There and Back Again"

Giselle Dutcher

Two years ago, in January, 2006, two students traveled to Terreritos, a rural village in Honduras, to assess the possibilities of helping the community with a water project. It was to be PennEWB's first international project. Tony Sauder, the PennEWB mentor for the trip, recalls that both visitors and villagers were initially skeptical – of each other and of the feasibility of the project. One of the early skeptics was the town plumber, but when he realized that his job was not in danger, he became one of the greatest supporters. Implementation came soon after in May of 2006, when 14 Engineering students assisted in the construction of the spring protection, digging the first 800 meters of trench and laying the first 300 meters of pipe of the 5000 meter long pipeline to the village. Its completion was undertaken by the community members throughout the summer months, and was observed by students during a follow up assessment in October of 2006. This was merely the beginning of a wonderful relationship.

With a new initiative spurred by the Terreritos community members, a new group of 15 students traveled for a pit latrine implementation trip in May of 2007. In the months before the trip, the students learned about the engineering principles of sustainable development, practical calculations for flow rate of water through pipelines, composition and dimensions of materials for pouring concrete. However, on arrival in Terreritos, students realized that the skills they really needed were mud mixing, adobe laying and goat-like footing (not to mention carrying 50 pound bags of sand and rocks half way across town to each site)! Project members began to form new relationships with new faces, and strengthen the relationships with familiar faces. Hygiene was constantly emphasized as an important factor for ones health, especially to the children. Education, for both community members and the implementation team, was occurring, and different cultures danced together to the whistle of the wind that streamed through the pine-covered mountain side.

Both students and villagers enjoyed the closer interaction that this project allowed. Students worked alongside the community masons, digging trenches for pipe, mixing cement for the slabs, and mud for the adobe bricks. One student commented, "At first it felt awkward to walk through peoples' homes and crowd their back yard, but everyone was very friendly. We were often invited in for coffee and crackers, and after a long day of work we were challenged to a soccer match." Sarah Casey, well remembered in the community from the previous year's trip was invariably surrounded by a flock of children who would not rest until she joined them in games. The community also held the inauguration of the new water system during our stay, a wonderful celebration of the community's accomplishments, and the debut of "Agua en Terreritos" a song written and performed by two of the community members.

After two years of involvement with Terreritos, departure was bittersweet. Many of the community members asked if we would be returning in the next year. At this time, we do not have further projects planned in Terreritos. However, we are proud that the community is now seeking to work with the local government to bring electricity to the village. We see this as a promising development, not only in terms of infrastructure, but in terms to the community's ability to seek the resources of the government, rather than relying exclusively on outside help. Though we may not return, Terreritos will remain a special place for Penn EWB, and we hope to live in the words of the song written about us: "*ahora lo importante es que hay agua en Terreritos.*"

Successful Beginnings for New Water Project in Cameroon

Julio Erdos

PennEWB members meet with Community Leaders

PennEWB is preparing for another international project! This time, the destinations are the villages of Kob and Tudig in Cameroon. From the 13th to the 26th of June 2007, a small team of Penn students and professors went to the Northwest Province to conduct an initial assessment of the project site. EWB members Hong Truong and Sarah Casey, along with Systems Engineering professor John Keenan, College professor Godlove Fonjweng, and professional mentor Vince Uhl surveyed the area, tested water sources, and established connections with the local community in order to prepare for a December implementation trip.

The communities of Kob and Tudig do not have a reliable system for providing their residents with safe drinking water. As a result, the villagers regularly drink coliform contaminated water, leading to frequent bouts of diarrhea as well as other health risks. Besides servicing the region's families, the water will also service the local health center, a church, and a nursery, all currently without potable water. The water system to be implemented will be gravity powered, similar to the system installed in Honduras in 2006; the expertise gained in Terreritos will prove invaluable for EWB in Africa. Multiple water sources will be used in order to account for lower flow rates during the dry season.

One of the most interesting aspects of this project is the manner in which it came about. Dr. Fonjweng, a former Penn professor, is originally from Kob. Dr. Fonjweng partnered with PennEWB with hopes of providing clean water for his hometown. This connection with the village is encouraging to the project's success, as well as practical: Dr. Fonjweng's family hosted the assessment team. The links created between PennEWB, the Penn community, and communities around the world are one of the most rewarding aspects of working with the group. PennEWB is globalization in a good way.

Hong Truong visits a family's home in Kob