Engineers for a Sustainable World
at Rensselaer Polytechnic Institute

PROGRESS REPORT: FALL 2011

ESW | The network that's committed to building a better world.

Engineers for a Sustainable World (ESW) is a global, non-profit network committed to building a better world. Established in 2002, ESW is comprised of students, university faculty and professionals who are dedicated to building a more sustainable world for current and future generations.

We believe engineers are a vital part of the solutions needed to meet global human needs while providing sustainable access to the world's resources for current and future generations. Developed countries contribute millions of tons of pollution and waste each year while every day, people around the world struggle to gain sustainable access to clean water, healthy food and suitable shelter. Through collegiate chapters such as the one at Rensselaer, ESW mobilizes students and faculty members through new educational programs, sustainability-oriented design projects, and volunteer activities that foster practical and innovative solutions to address the world's most critical challenges.

A holistic approach to "global sustainability"

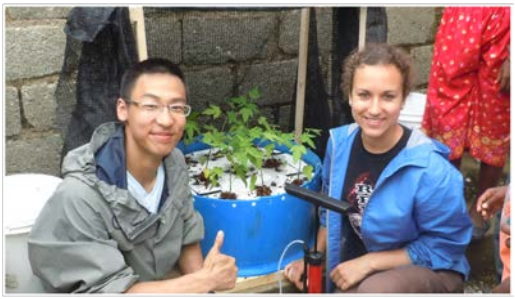
ESW addresses problems in both developed and developing communities. We focus on finding more sustainable ways of living to address the challenge of over-consumption, often prevalent in developed nations, as well as increasing sustainable access to basic resources for those who are living in poverty. We believe in building a better world where all of humanity can lead healthy, productive lives, and live in balance with our earth.

ESW at Rensselaer

ESW-RPI was founded May 2005 and officially recognized by both ESW National and the Rensselaer Union that fall. In its first four semesters, the members of ESW-RPI engaged in a flurry of activity, including hosting a workshop on the benefits of biodiesel, designing a sustainable water pumping and filtration system for the Nigerian village of Umuluwe, facilitating Earth Day activities on campus and collaborating with EcoLogic on numerous projects related to environmental issues on campus. By fall of 2007, 61 students and 2 faculty/staff members were affiliated with ESW-RPI. International projects continue today, with ESW-RPI's projects in Haiti and Peru becoming its best-known. Read on for more information on our progress in Haiti and Mexico, as of December 2011.

It is our goal to work together with other humanitarian and sustainability-oriented organizations on and off campus. From recent efforts, we celebrate progress in working more closely with To Love a Child, RPI Engineers Without Borders and the Millennium Campus Network.

FEATURING:



The Haiti Experience

Nelson Lim (left) describes his experience in Haiti with classmate Gloria Yaroslava Condon (right).

Developing Sustainable Societies

ESW-RPI is tasked to foster sustainability in a community in Ek Balam, Mexico. Chris Volk, Christine Madsen, and Erin Lennox (shown left to right) visited the site over the summer of 2011.

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The Haiti Experience

by Nelson Lim

[Summer, 2011] The primary purpose of this eight-day service trip was to implement two important projects: a solar-powered network and a hydroponics garden. Additional goals included making as many Haitian connections as possible and immersing ourselves in the Haitian culture and way of life. The installation of solar panels atop a tall 15-foot concrete tower was an intimidating challenge as the General Electric-donated solar panels arrived in our possessions with very minimal and general instructions, mostly to do with the electrical components of the system as opposed to the mechanical assembly of the panels. We figured out that the entire system was to be mounted on a three-foot long, six-inch diameter steel pipe that was to be secured via cement onto a sizable platform suspended atop a wood and concrete tower, so that was the main task on day 1 in La Hoye. I got down and dirty with cement using nothing but a bucket, my gloveless hands and my Spanish-only-speaking Dominican amigo (who could only speak Spanish; THANK GOODNESS for high school Spanish!). The second day was an instruction-less assembly and mounting of the solar panels. After much guesswork, we were able to assemble it on the ground by midday and hoist the giant apparatus up onto the concrete-secured pipe by nightfall. We spent a lot of time up on the tower wrenching away without a correctly-sized screwdriver. The rest of the team devoted the rest of that day and the next day to wiring up light bulbs all over the classrooms and kitchen. We faced the challenges of lack of equipment and instructions, inoperable switches, live wires and more, but in the end, the panels charged the batteries, the batteries powered the lights and the lights dramatically blinked on. It was quite an inspiring sight to see our completed work. Our Haitian friends were thoroughly pleased. At this project's completion, we returned to Lascahobas to start our hydroponics garden, which is essentially a revolutionary growing method that does not require any fertile land (soil) or electricity and necessitates minimal maintenance. Our original design involved cutting giant 55-gallon drums in half lengthwise, flipping them on their sides and using them as large trough-like basins for the plants and water to sit in. Unfortunately, the drums available in Haiti were nothing like the drums we used up at RPI, so we had to modify and greatly scale down our design from six troughs to a single, simple system consisting of one bottom-third of a 55-gallon barrel. We also had to design a rain barrier to protect our plants from the insanely heavy downpours during the wet season that we did not account for in earlier test trials back in school. However, in the end, we had nine papaya plants, roots submerged in soaked coconut husk, and three trained caretakers who were dedicated to pumping air daily into the system, via bicycle hand pumps, and adding necessary micronutrients weekly, via provided pipettes. Along the way, we made tons of Haitian friends, especially among the children, picked up a few phrases in Creole and French and learned a lot about how to live without electricity. That means early 5AM starts to the day and early 8PM bed times to ensure maximum activity during sunlight hours because once the sun disappears for the night, it is literally pitch black because nobody has lights and few can afford flashlights. We learned to appreciate just how satisfied with life Haitians are without all the luxuries we have in more developed countries. YOU DON'T NEED air conditioners, television shows, candy, Internet, Facebook to be happy. All you need is your family, your friends and a vivid imagination... but a little technology is more than welcome! Contact: limn@rpi.edu.

Developing Sustainable Societies in Mexico

by Chris Volk

The Foundation for Developing Sustainable Societies (FDSS), led by Ted Lawrence, approached ESW-RPI with the opportunity to help a small pueblo in Mexico called Ek Balam. After a semester of researching and planning a handful of projects to the community, three ESW-RPI members—Chris Volk, Christine Madsen, and Erin Lennox—traveled to the pueblo during the summer of 2011 to further understand the culture of Ek Balam and its surrounding area. After meeting with local leaders, living with three separate families, and eating all of their meals locally, the students returned to RPI with the knowledge to make an impact on the community. Leaders of the village, FDSS, and ESW-RPI explored the possibility of creating a model home in the town, primarily to demonstrate a variety of sustainable technology, educate the importance of sustainability, and house visitors and volunteers of the village. During the fall 2011 semester, the ESW-RPI team designed a small irrigation system to save water and electricity within the village as well as explored various uses to harness wind energy like "wind belts." This spring, the team is looking for more members to tackle other projects for this community, such as a cleaner burning stove, a grey water system, and a solar power system. If you are interested, please contact Chris Volk at volkc@rpi.edu.