

What is sustainable development? "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs." - UN

# About Us ----



**The Problem:** Every day, over one third of the world's people are trying to work their way out of poverty. For many, the daily struggle for clean water, food, shelter, sanitation, energy, and other basic services are barriers to more productive lives. Additionally, the growing world population continues to increase the demand on scarce natural resources, requiring innovative solutions and cooperation to ensure that we can provide for the needs of current and future generations.

*Our Solution:* Engineers for a Sustainable World at Northwestern University (ESW-NU) is a nonprofit student organization that is a part of a network of students and professionals committed to progress through innovative engineering design. Through cooperative domestic and international development projects, education, and public outreach, ESW-NU builds social capital in developing communities and tackles the challenges of long-term environmental, social, and economic sustainability.



**Mission Statement:** Engineers for a Sustainable World at Northwestern University (ESW-NU) focuses on the challenges of long-term, sustainable development by seeking lasting solutions for reducing poverty, and by working to improve environmental, social, and economic sustainability worldwide.



The members of ESW consist of dedicated and talented undergraduate and graduate engineering students currently studying at Northwestern University who volunteer their time and energy to make a difference.

# Current International Projects

ESW-NU has been in contact with local non-governmental organizations (NGO) at multiple sites in Panama to collaborate on the design and implementation of sustainable, environmentally conscious, and culturally aware solutions to their specific problems.

#### Panama Scoping Trip - Dec. 10 to 20, 2005

A team of ESW-NU members, including two graduate students and two undergrads, traveled to Panama to meet with the local NGOs and to determine potential projects for ESW-NU. Currently, the chapter is undertaking two such projects, described below.





Panama Scoping Team (left to right): Debra Weissman, Jennie Kessler, Aaron Greco, and Dave Dunkman



#### Wastewater Treatment Plan (Portobelo, Panama)

- **Problem:** Untreated wastewater in the town is damaging the local colonial-era landmark, contaminating the drinking water, and polluting the bay, where residents swim regularly
- *Solution:* Design a cost-effective, easy to maintain, and replicable system to treat the wastewater
  - **Expected Results:** 
    - Improved public health
    - Enhancement of tourism and the local economy
    - Preservation of the national landmark

Dave Dunkman surveys the water condition during the scoping trip

### Solar Recharge Station (Santo Domingo, Panama)

- **Problem:** The only electricity the ranching community has is from car batteries that need to be recharged in Panama City, which is not easily accessible
- *Solution:* Design and help implement a solar photovoltaic battery-recharge station that will meet the developing electrical needs of the community
- Expected Results:
  - Consistent electricity for the community
  - o Improved standard of living



The Panama Scoping Team meets with the residents of Santo Domingo to discuss possible projects

## Past International Projects

ESW-NU members have long been involved internationally through the ESW-National sponsored Summer Engineering Experience in Development (SEED) Program and Habitat for Humanity International. These programs place undergraduate and graduate engineering students with professional engineers in a number of countries to work in small teams on technically based projects. The work done by our members has significantly improved lives in these areas.

#### Honduras – Summer, 2005

From June 6 – August 20, Anne Mikelonis, a Civil Engineering junior and member of ESW-NU, worked in northern Honduras at a coagulation and flocculation water treatment plant sponsored by SEED. The plant was designed to reduce the turbidity in the water after heavy rains in the winter, which causes the water to become muddy. Anne worked with two other volunteers to oversee the completion of construction, conduct performance testing, and train the local operator. The project helped bring cleaner drinking water to a community of over one thousand people.



Civil Engineering junior, Anne Mikelonis, working with local community members at the water treatment plant in Honduras.

The clear comparison of the water from before the treatment plant (far right) and after (far left)

### Costa Rica - Spring and Summer, 2004

ESW-NU members traveled to Costa Rica in the spring (March 19-28) and summer (June 15-25), 2004 to participate in Habitat for Humanity's Global Village volunteer program. The goal was to assist in building a house for the underprivileged community from the ground up. During the spring trip, the group analyzed alternative building materials in order to design a more sustainable structure for the houses. The summer trip was devoted to initiating the construction of the buildings. ESW-NU members also identified future development project opportunities in the region.



A team of Northwestern students nearly finished building a home from ground up in the semi-rural town of San Ramon, Costa Rica.

# Current Local and Community Initiatives -

In addition to making a difference overseas, ESW-NU is also taking on several local endeavors to raise awareness of sustainable development.

### ESW Class – Winter and Spring, 2005



ESW-NU members discuss how to initiate a sustainable development class

The members of ESW-NU are developing a project-based design course that incorporates sustainable ideals and practices. ESW-NU will help compose the curriculum, suggest design projects, serve as a link to ESW-National and its educational resources, give student input, and build awareness of the course on campus. Currently, ESW-NU is testing and refining the class after starting it as a subclass of the existing Institute of Design Engineering and Application (IDEA) project classes. The group hopes to have an independent class by next year.

## Shuttle Stop – Winter and Spring, 2005



A potential design of the shuttle stop

ESW-NU is working to design and build a shuttle stop on campus out of recycled and environmentally friendly materials. The team has received approval from the University to start designing and has discussed what regulations will need to be followed. This winter, the team will work to get the design finalized and approved through the university and begin obtaining permits to construct it ourselves in the future. The main goals are to raise awareness about what can be accomplished with recycled materials and to create a sustainable design that will last.

### **Local School Outreach Program**

To ensure that future generations will be responsible with the limited resources available in the world, they need to learn about sustainability at an early age. ESW-NU members are working with local schools to set up a program to teach kids about the different sources of energy available today and the importance of renewable resources. This is a great opportunity for the members to impart what they have learned and engage young students to talk about sustainability.

### Energy Day @ NU - May 17, 2006

Based on the success of Energy Day in 2005, ESW-NU has decided to hold another such event this spring. This year's Energy Day will focus on how to make sustainable ideas practical in the marketplace. The day will include two keynote speakers from companies that have made sustainable development a prominent goal of their organization, a debate on myths about renewable energy, and a panel discussion about how incorporating sustainable ideas into businesses can be profitable.

## Past Local and Community Initiatives

ESW-NU has organized and sponsored many different activities over the past years including events, projects, panel discussions, and faculty presentations. Below is a summary of some of our accomplishments.

#### **Events**

#### Energy Day @ NU - May 23, 2005

Co-sponsored by ESW, "Energy Day @ NU" was a day-long event on campus to increase awareness of renewable energy and sustainability. This day included two keynote speakers, a panel discussion on sustainability, and a display of relevant projects, research and applications. Additionally, the day featured relevant activities for middle and high school students, designed to expose them to the importance of energy conservation early.

#### **Projects**

#### Wind Energy – Winter, 2004

A team of ESW members researched the feasibility of bringing wind power to Northwestern's Evanston campus. A final proposal was developed, covering all aspects relating to a turbine installation, from turbine specifications and placement to an opinion poll of students' acceptance of a turbine on campus. The proposal is currently being reviewed by the campus administration.



What a wind turbine on campus would look like



Lovelace Park's Pond covered with algae

#### **Pond Recovery – Spring, 2004**

Lovelace Park's pond, formerly a landfill, is a place where many children go to learn to canoe and fish. The growth of a thick mat of algae however began posing increased health concerns in the local community. A team of students including members of ESW-NU studied the ecosystem and developed recommendations for the Evanston Ecology Center to alleviate the problem.

#### **Renewable Energy – Spring, 2004**

An ESW team investigated the possibility of a renewable energy system for the Evanston Ecology Center with the hope of reducing their energy costs and promoting environmental sustainability. The team investigated the possibilities for solar photovoltaic cells, wind energy, solar thermal heating and developed a final proposal with recommendations for next steps.



ESW-NU members testing with solar photovoltaic cells

# Support Us



*Our Need*: As a nonprofit, ESW-NU relies on donations from companies, organizations, and individuals to continue our mission to develop innovative sustainable solutions. These donors then become part of our community and work with us to determine how we can make the most impact. As we move ahead to take on greater challengers to improve the world that we live in, we invite you join in our community.

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*How you can help*: Become a sponsor! Sponsors are a vital part of our community as they transform our desire to assist those that are less fortunate into reality. Without funding and technical guidance from our generous sponsors, none of our projects and achievements would have been possible. As a sponsor, you can expect every cent and minute of your contribution to go directly into making a difference in the lives of those who are in need. Additionally, you will get the following benefits:

- Tax-deductible donation
- Acknowledgement at our meetings, website, events, speaker sessions, and in our widely read biweekly newsletters
- Increased visibility on campus and internationally
- Subscription to our biweekly newsletter

If you are interested in becoming a sponsor please contact Eric Lai at e-lai@northwestern.edu

Projected Cost of Our Endeavors in 2006	
Item	Expenses
Panama Projects	
- Winter Scoping Trip (For Four Students)	\$4,000
- Summer Return Trip (For Four Students)	\$6,000
- Testing Equipment	\$5,000
Shuttle Stop Project	
- Materials & Construction	\$3,000
Local School Outreach Program	
- Educational Materials	\$1,000
Energy Day Event	
- Speaker Expenses	\$3,000
- Event Hosting Costs	\$1,500
ESW National Conference - Travel & Registration Fees (For Three Students)	\$1,500
Two Local Speaker Events	\$1,000
TOTAL	\$26,000

## **Current Sponsors**

ESW-NU would like to acknowledge our sponsors who have contributed to our success. Thank You!

Office of the Dean

Civil and Environmental Engineering

Office of Industry Relations



IDEA



## Thank You



#### Member

Randall Snurr Joseph Fitzpatrick George Sprouse

Major

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MechE

MechE

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**IEMS** 

IEMS

IEMS

Aaron Greco Tanya Tickel Deb Weissman Anita Budhraja Nikhil Chawla Angela Han Erik Langeteig John Romankiewicz MatSci

Year Professor Professor Grad Student/ Industry Professional Grad Student Grad Student Grad Student Senior Senior Senior Senior Senior

Member
Asha Shekaran
Allan Schmaltz
Laura Pigion
Dave Dunkman
Eric Lai
Crystal Lee
Patrick Luckow
Anne Mikelonis
Skander Spies
Jennie Kessler
Jared Satrom
Kelly Luckasevic

Major BioMedE PoliSci IEMS CivE ElecE Econ MechE CivE MechE EnvE MechE **BioMedE** 

Year Senior Senior Pre-Senior Junior

Junior Junior Junior Junior Junior Sophomore Sophomore Freshman

## **Contact Information**

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