What is sustainable development? What is sustainable development? What is sustainable development? 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
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.
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.

**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

**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
  - Improved standard of living
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.

**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.
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

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

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.

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.
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.

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

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Current Sponsors

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

Office of the Dean
Office of Industry Relations

Civil and Environmental Engineering
IDEA
Thank You

Contact Information

Engineers for a Sustainable World
C/O Professor Randy Snurr
Northwestern University
Technological Institute, Room E136
2145 Sheridan Road
Evanston, IL 60208

National Website: www.esustainableworld.org
Northwestern Chapter Website: www.eswnu.org
Email: esw@northwestern.edu