



Engineers for a
Sustainable
World - NU

ESW Circular

January 2, 2012

Fall 2011/Winter 2012

Dear ESW Community,

Happy New Year! Welcome to 2012 and the beginning of Northwestern's winter academic quarter. With a new year comes an opportunity to share our most recent accomplishments and our most exciting new ventures. For many, the new year is a time to reflect and make resolutions for the coming year. But for us, our core resolution is the same as it has always been - to pursue pioneering and substantive progress in creating a sustainable world. Each year is a chance to build upon that core mission, and in this circular we will focus on four ESW projects and events that accomplish this goal by forging new powerful and innovative partnerships.

In the following pages, you will find stories of brand new ESW projects, national ESW events, and a new partnership for a well-established ESW project. The first story is of the India Modular Roof project, a collaboration with an IdeaLab company in the Bay Area on sustainable roofing solutions for India, while the second is a local cooperation between a team of ESW members and the City of Evanston on composting. We will also share with you the work of GRIN, ESW's energy auditing team, and its project on improving the efficiency of municipal buildings in Evanston. Finally, we'll give you the details of the ESW National Conference in Buffalo, NY.

While these projects and events may be geographically and technically dissimilar, their meaning to ESW is the same - they are opportunities to bring ESW's experience and intellectual capital to new innovative groups outside of the university. Two years ago, GRIN had only performed one audit of an on-campus dormitory. Today, with twelve full-scale energy audits in its repertoire, GRIN is working closely with Evanston to broaden its impact. For the Modular Roof team, the fall quarter of 2011 marked the very beginning of the project, but with hard work and the dedication of a team of undergraduate and graduate engineers, the team is moving forward quickly. In the coming months, we look forward to the opportunity to share our progress on all of our projects with you.

Thank you for your support and for your curiosity about our organization. As always, if you'd like to learn more about the projects in this circular or our eight other active projects, visit our website at eswnu.org. If you have any questions or comments, you can reach us at contact.eswnu@gmail.com.

Warm Regards,
Sam and Andrea, ESW Co-Presidents



ESW-NU members at the ESW National Conference

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International Project Focus: India ModRoof

Currently, many urban residential areas in India are faced with challenges that result from low-quality roofing. Most roofs are constructed from corrugated cement, corrugated metal, or plant matter held together with mud. A recent study on the housing situation in both rural areas and urban slums concluded that 80% of roofs are inadequate. Each roofing medium has its own unique problems, but water leakage and overheating are common among most roofing options.

This past fall quarter, a group of ESW students began a collaboration with a social innovator/entrepreneur from an IdeaLab company in the San Francisco Bay Area to start the India ModRoof project here at Northwestern. The project aims to create a modular roofing system that combats the prominent problems of water leakage and overheating, while remaining affordable and accessible to the low-income population. Furthermore, the final product should make use of regionally sustainable materials and require easy installation and maintenance, so as to facilitate management by community members.



An urban slum in Mumbai

Over the course of the fall quarter, members of the India ModRoof team brainstormed various materials and roof designs that would provide ventilation and prevent water leakage. By the end of the quarter, the team developed a preliminary roof design that will be ready for prototyping during winter quarter. The team hopes to finalize quantitative specifics and construct prototype roof panels by the end of winter quarter. Ideally, field testing will be possible by the end of the year.

Local Project Focus: Evanston Composting Initiative (ECI)

One notable result of the ESW Summer Fellowship was the formation of the Evanston Composting Initiative (ECI). While meeting with members of Citizens' Greener Evanston and the City of Evanston's Sustainable Programs Coordinator Catherine Hurley to investigate potential projects for collaboration, a partnership was formed. Noting that one of the City's main sustainability objectives was to increase the prevalence of composting, ECI members met with Catherine Hurley to determine future steps. Deciding that a project based on empirical data would undoubtedly be most effective, ECI members began developing a survey to determine the 'state of composting' in Evanston. The goal is two-fold. First, the survey will gather data on the effectiveness of the composting bins that the City had distributed free of charge to over 600 residents. Second, the data from the survey will provide a broader understanding of who is or is not composting and what additional resources are needed to increase composting participation.



A handful of beautiful compost

The City has agreed to directly sponsor the distribution of the online survey to those who received bins from the City. Additional respondents will be reached via email and other networks. The survey is set to open early in 2012. After collecting the data and creating a report, ECI members hope to determine how to develop effective interventions based on the identified needs of the Evanston community. ECI also hopes to be involved in future plans to bring composting programs to campus. Ultimately, ECI students are incredibly excited to participate in the creation of a culture of sustainability in the Evanston community.

Local Project Focus: *Green It Now (GRIN)*

This coming quarter, GRIN (G**Re**en It Now) continues to make buildings in the Evanston community more energy efficient with its latest project - an investment-grade energy audit of the Fleetwood-Jourdain Center, an Evanston community center on Foster Street west of Green Bay Road. This project marks the thirteenth audit for the project, and presents both new challenges and new partnerships for the team.



ESW students and community members conduct a walkthrough of the Fleetwood-Jourdain Center

The City of Evanston's sustainability coordinator Catherine Hurley and Sylvia Juzwa of Remake Architecture, as well as employees from the city's Facilities Management department and volunteer professionals from Citizens' Greener Evanston, have been working closely with the GRIN team to examine the building and discuss possible ways to make the building more efficient. On a cold November morning, members from GRIN as well as these partner organizations met at the center to see the building's internals for themselves. After this initial walkthrough, the GRIN team produced a long list of ideas for improvements, including sensors to control lighting and a smart demand control system to make the HVAC system more efficient.

Next quarter, GRIN will carry out research on these potential improvements to determine how much they can save the City in their annual energy bills. After all this research is complete, GRIN will present their findings to the City and offer its help in implementing the changes.

ESW National Conference

ESW-NU represents just one of 30 chapters of a national organization. Every year, a national conference is held as an opportunity to unite members from each chapter, share best practices, discuss successes and failures, and build community with the national organization. In addition, conference speakers provide insight into topics of interest to the ESW community - ranging from technical conversations on the latest research in ceramic water filters to discussions on the policy behind urban planning.

This year, the ESW National Conference was held at SUNY Buffalo and four members of ESW-NU traveled to the conference to share their stories. Of the four members in attendance, two were the co-presidents, Andrea and Sam, and two were sophomore project managers, Vivek and Sheng. This attendee diversity provided a valuable opportunity for the presidents to meet with other chapter presidents while the younger members learned more about the national organization and its vision.

The conference provided two days of talks, covering a wide range of topics in energy and resources, industry, and initiatives on campus and in communities. Attendees participated in brainstorming sessions with the goal of developing ideas to improve ESW and the national team. Additionally, attendees were able to enjoy a tour of the Niagara Hydroelectric Power Plant and an awards banquet. The Northwestern Chapter was recognized with a silver award at this event. On the last day of the conference, the group came together to give back in a tree planting service project.



Vivek, Andrea, Sam and Sheng accept a silver award for ESW-NU at the national conference