Energized by overwhelming scientific evidence and agreement that human activity is causing serious changes in the Earth’s climate, the Erb Institute has joined environmental, social, and economic leaders around the world in promoting climate-change research, action, and opportunity on a global scale. Reaching across business sectors and national borders, the Institute has identified and disseminated strategies for advancing energy-efficient technologies, informing the climate policies of key decision-makers, and encouraging climate-wise behavior by corporations and consumers.

ENGAGING THE “PERSUADABLE MIDDLE” IN CLIMATE ACTION

Promoting climate-friendly changes in public comprehension, culture, and consumption is critical for advancing climate action. The challenge, stated Erb Director Andrew Hoffman and Peter Frumhoff of the Union of Concerned Scientists in a 2012 capstone report, is to raise “awareness among the disengaged and the unconvinced that climate change is occurring due to human causes, poses significant risks to our well-being, and can be addressed through changes in energy technologies, public policies, and the actions of individuals.” Their conclusions, distilled from a three-day interdisciplinary workshop on climate communication, highlighted the need to engage the “persuadable middle,” to deploy multiple messengers to multiple audiences, and to promote greater cross-pollination and collaboration within the social-science community. The workshop, titled “Increasing Public Understanding of Climate Risks and Choices: Learning from Social Science Research and Practice,” was held in January 2012 at the Ross School of Business. http://bit.ly/yFOQze

ERB CASE STUDIES DRILL DOWN ON CLIMATE STRATEGIES

China Mobile’s Green Action Plan

In their case study, “Integrating Environmental Goals and Firm Strategy: China Mobile and Climate Change,” Erb Managing Director Rick Bunch and Jacob Park of Green Mountain College drilled down on the Green Action Plan developed by Wang Jiantou, the president of China’s largest telecommunications company. The authors were assisted by Cynthia Koenig, Erb ’11, and Aparna Sundaram, Erb ’09. According to the report, the company-wide environmental strategy was designed to reduce China Mobile’s energy consumption by 40% per business unit by 2010 compared to 2005 levels, and to prevent the use of 8.2 billion kilowatt-hours of electricity. Wang also established a corporate social-responsibility program to enhance the company’s brand image and advance profits. The case study examined whether the firm’s “grow together harmoniously” policy and environmental strategy was sufficient to meet the future expectations of both public shareholders and the Chinese government, which in 2009 announced a target of reducing carbon-dioxide emissions by 2020 and developing a green economy.

Case Studies continued on page 3
ERB FELLOW PROMOTES LOW-CARBON LIVING IN ANN ARBOR

Can residential households help to slow climate change by reducing their carbon footprint? Kim Wolske, Ph.D. ’11, a Research Management Fellow at the Erb Institute, demonstrated that significant reductions in carbon-dioxide emissions are possible when homeowners receive information and encouragement to adopt energy-saving household, transportation, and food behaviors.

In 2009, Wolske designed and piloted an energy project in Ann Arbor challenging residents to reduce their emissions for a month by 2% – the amount of emissions decrease needed each year to achieve an 80% reduction by 2050. Two hundred households received Wolske’s booklet describing 35 ways to decrease their carbon footprint and detailing the benefits of climate-friendly behavior. “I wanted to make the global problem of climate change seem more local and achievable,” explained Wolske, who earned her doctorate in environmental psychology from the University of Michigan’s School of Natural Resources and Environment. By month’s end, most households exceeded the 2% goal, lowering their carbon-dioxide emissions by an average of 6%. Families who received regular feedback about the positive impact of their actions tended to engage in more climate-wise activities. “My project showed household residents how small everyday actions can add up to make a difference,” Wolske concluded.

ERB CALLS FOR RELIABLE, AFFORDABLE “SMART” HOME APPLIANCES

The aging $700 billion U.S. utility grid will require trillions of dollars of new investment in coming decades. Introducing reliable, affordable “smart” home appliances connected to the utility grid, said industry expert Tom Catania, would help to even out the energy-demand curve and accommodate more-variable electrical power from wind and solar sources.

“Smart and connected [home] appliances, broadly deployed, would be one of the nation’s most cost-effective ways to reduce peak demand and enhance the value of renewables on the [utility] grid,” wrote Catania, the Erb Institute’s inaugural executive-in-residence, in the February 2012 issue of ASHRAE Journal. In his article, “Appliances & the Smart Grid,” Catania said the appliance industry has estimated that the projected growth in U.S. peak demand for electricity in 2030 could be avoided through full implementation of smart appliances.

Catania, who recently retired from Whirlpool Corp. as vice president of government relations and head of global public policy, made a strong business case for promoting home appliances that can communicate with the utility grid and shift residential loads away from peak demand times. In 2006, Whirlpool collaborated with the Pacific Northwest National Laboratory on a demonstration project that showed a smart dryer could detect, without human intervention, frequency variations on a utility grid and interrupt the dryer’s heating elements for up to 10 minutes while keeping the clothes tumbling. “Creating this new, more socially valuable capability in its products presented a better long-term business proposition [for the home-appliance industry] than the expensive pursuit of taking out the last watt of energy from already efficient products,” Catania said.

Speaking at the International Energy Agency’s North American Regional Workshop in April 2012, Catania reiterated his support for the new generation of smart grid-connected appliances, saying they “could liberate additional cost savings – from demand as well as energy – for customers and energy providers.” However, he noted, new policies will be needed to accelerate the introduction of smart appliances.
DIGITAL ARTIST ILLUMINATES SUSTAINABILITY THEMES

In November, Seattle artist Chris Jordan installed an exhibit of 18 digitally created pointillist artworks at seven University of Michigan locations to illustrate the nearly incomprehensible magnitude of the social, political, economic, and ecological issues confronting mankind. His “Running the Numbers” display specifically “looks at contemporary American culture through the austere lens of statistics,” Jordan said. “Each image portrays a specific quantity of something: two million plastic bottles (five minutes of American bottle use); 106,000 aluminum cans (30 seconds of American can consumption) and so on.”

Among Jordan’s most telling masterpieces is the 2007 “Ben Franklin,” depicting “125,000 $100 bills ($12.5 million), the amount our government (spent) every hour on the war in Iraq.” The artist’s “Cans Seurat,” also created in 2007 (which was displayed in the Ford Commons at SNRE), digitally aggregates the 106,000 aluminum cans used by U.S. consumers every 30 seconds. A third provocative piece, the 2008 abstract “Oil Barrels,” represents “28,000 42-gallon barrels, the amount of oil consumed in the U.S. every two minutes” and “Light Bulbs” (displayed outside Ross School of Business Dean Allison Davis-Blake’s office) depicts 320,000 light bulbs, equal to the number of kilowatt-hours wasted every minute in the United States.

The exhibit was co-sponsored by the Erb Institute, U-M School of Art & Design, Graham Sustainability Institute, College of Engineering, School of Natural Resources and the Environment, Institute for the Humanities, Life Sciences Institute, ArtsEngine, Program in the Environment, and the Chelsea River Gallery.

ERB CASE STUDIES DRILL DOWN ON CLIMATE STRATEGIES (CONT FROM PG 1)

NEXT ERA’S REC PURCHASE

Erb Institute faculty and students analyzed NextEra Energy Resources’ green-marketing strategy to expand its purchase program for Renewable Energy Certificates, or RECs, which allow utility customers to reduce their carbon footprint while accelerating the growth of renewable-energy development in the United States. The case study, “NextEra’s EarthEra Renewable Energy Trust: Marketing America’s Renewable Energy Future,” was authored by Jenna Agins, Erb ’13, Rajat Bhatia, Erb ’13, and Daniel Gonzalez-Kreisberg, Erb ’14 under the guidance of Erb Director Andrew Hoffman. Their findings revealed that NextEra Energy Resources, the largest renewable-energy generator in North America, needed to overcome a sluggish economy, reduced government incentives for renewable-energy projects and increased public skepticism of corporate “greenwashing” in order to build a powerful customer base and gain mainstream appeal.

ACADEMIC PUBLICATIONS


http://bit.ly/ZUYm5m
Erb Plays Prominent Role at COP 18

Assessing Demands for REDD Credits

Nancy Gephart, Erb ’14, and Sam Stevenson, Erb ’14, and their master’s project team presented preliminary research findings on the demand for forest carbon credits in the U.S. voluntary market, and future California compliance market, at Forest Day during COP18. Earlier in the fall, the students surveyed the producers and consumers of REDD credits to learn about their motivations for market entry and buying or selling credits. REDD (Reducing Emissions from Deforestation and Degradation) is a set of steps designed to use market and financial incentives to reduce the emission of greenhouse gases from deforestation and forest degradation. Industrialized governments and corporations often utilize REDD credits to meet their emissions targets or to trade within carbon markets.

“In presenting at Forest Day, we hoped to gain feedback on our initial gap analysis and raise awareness for potential ways of linking REDD credit producers and consumers,” said the team, which received funding from the Erb Institute. “We anticipate our work will be relevant to a wide audience,” added Gephart.

Provisioning Climate

Emily Taylor, Erb ’14, helped the World Resources Institute (WRI) promote a better understanding of climate finance among delegates attending the COP18 Doha Climate Change Conference in December. The opportunity to participate in the 18th Conference of the Parties to the United Nations Framework Convention on Climate Change in Qatar arose from her summer internship in Washington, D.C., where she worked on WRI’s Climate Finance and the Private Sector project. The project aims to improve the effectiveness of public climate finance by increasing private capital flows to developing countries. Taylor contributed to the working paper “Public Financing Instruments to Leverage Private Capital for Climate-Relevant Investment,” which examined how the public sector’s use of direct low-interest loans, equity investments, and credit guarantees can improve the risk-reward profile of these projects.

“Developed countries have committed $100 billion by 2020 to aid climate mitigation and adaptation in developing countries, but that amount falls far short of what is needed,” Taylor explained. “WRI’s project will engage governments, public financial intermediaries, private investors, and project developers to create best practices in provisioning climate finance, which can be channeled through development banks, aid agencies, public-private funds, or the new Green Climate Fund to help developing countries cope with climate change.” She traveled to COP18 under University of Michigan sponsorship, with partial funding through the Rackham Graduate School and School of Natural Resources and Environment conference travel funds.

World-Class Blogging From the World Stage

Erb PhD Fellow and Oikos International student reporter Sunmin Kim has provided thoughtful interpretation and analysis from some of the world’s most important global environmental summits. Sunmin is a joint PhD student in Strategy and Environmental Engineering studying sustainability-driven business strategy. Here is a sampling of her work:

- The Road from Dubai to Davos / http://bit.ly/TBDLxZ