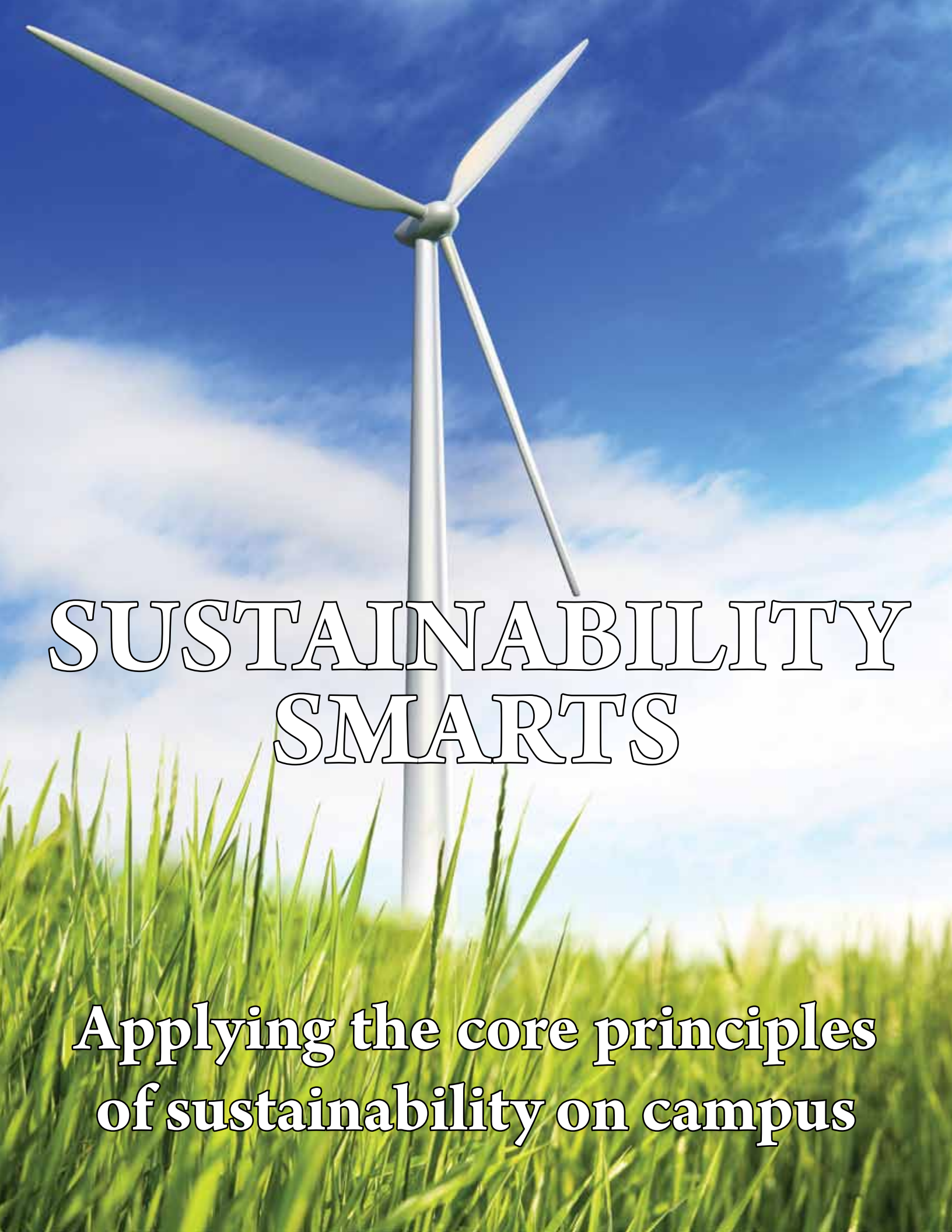

SUSTAINABILITY SMARTS

Applying the core principles of sustainability on campus

Association of College Unions International
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Bloomington, IN 47404-3839

Sustainability Smarts

Applying the core principles of sustainability on campus

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Additional responsibilities include organizing the ACUI Hot Topics Round-Table webinars, overseeing the College Unions Poetry Slam Invitational, working with the Remark. competition, and contributing to The Commons.

Stringer studied journalism at Indiana University and has worked at ACUI for four years.

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Rudisille earned his bachelor's degrees in adolescent education and mathematics from the University of Toledo and his master's degree in college student personnel from Bowling Green State University.

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INTRODUCTION

Sustainability, sustainable, green, eco-friendly—these are more than just buzz words. These are words that are now entangled in the daily fabric of life. Kids are learning about sustainability in primary schools, more students are studying environmental concerns in college, and people of all ages are making attempts to be green, from recycling to volunteering to buying hybrid vehicles.

As the green movement grew around the world, it also gained ground on college campuses. Student organizations focused on implementing green practices, institutions hired sustainability coordinators, and construction projects started to revolve around the variety of sustainable features.

It is these concepts that pushed the green movement from just a talking point to action. As higher education moves into the next decade, it is time to ensure that campuses are not just looking at the environmental aspects of sustainability or only considering the economic impact of employing green initiatives. Campuses should begin to consider the core principles of sustainability, often referred to as the triple bottom line—environmental, economical, and social. Only when being sustainable in all three principles is a program, building, or campus achieving the triple bottom line.

Sustainability Smarts features three articles, one discussing each aspect of the triple bottom line.

Environmental

The most commonly addressed sustainability notion is the environment. Recycling, building green, community gardens, clean energy—these are all environmental concepts. Concerns addressed in this area are those affecting everyday surroundings, ensuring that the earth will be better for future generations.

In *Sustainability Smarts*, the issue of building green college unions is tackled. The article provides an overview of LEED for New Construction as well as LEED for Existing Buildings and offers case studies from unions that achieved certification.

Economical

The economical principle is not only concerned with the money that may be saved or spent on different green features, but also how colleges commit financial resources to sustainable initiatives, including the investment of capital in green companies and the use of funds for sustainable programming.

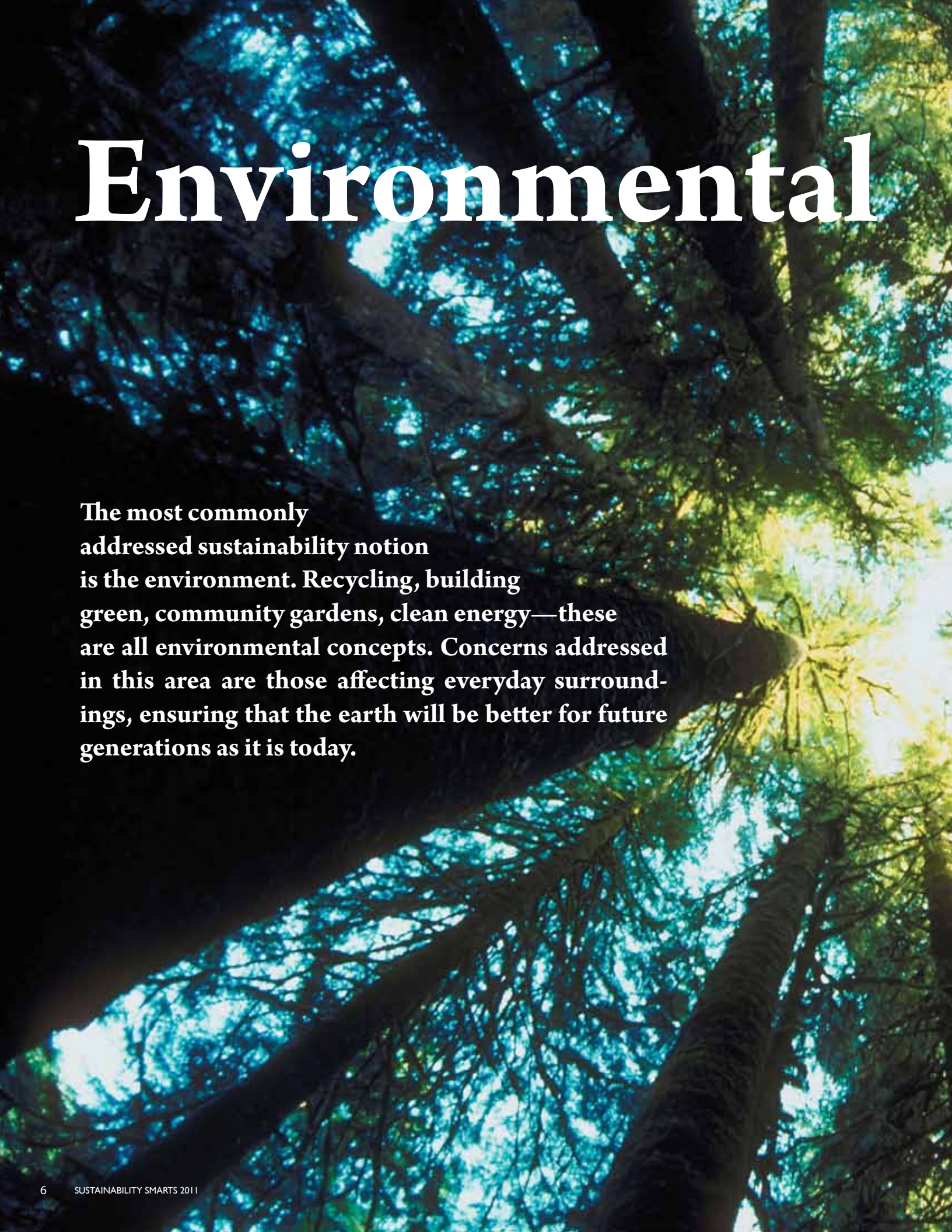
Sustainability Smarts takes an in-depth look at different funding models for sustainability on college campuses—from revolving loan funds to energy performance contracts.

Social

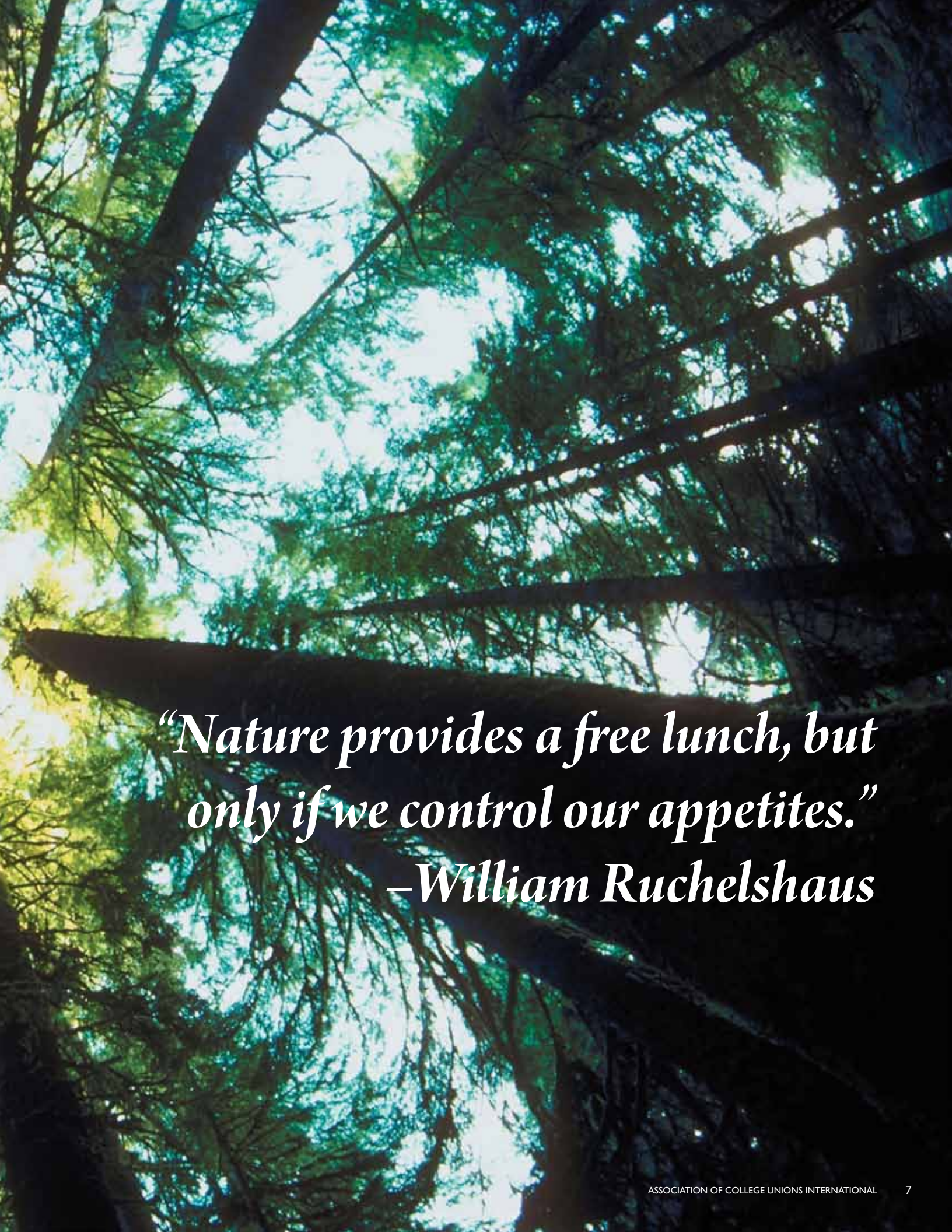
The social area focuses on how one interacts with others, whether it be donating time and money to a cause or taking a leadership role in a green student organization. The social principle's purpose is to ensure that individuals are not just concerned with themselves, but involved with the betterment of the greater community.

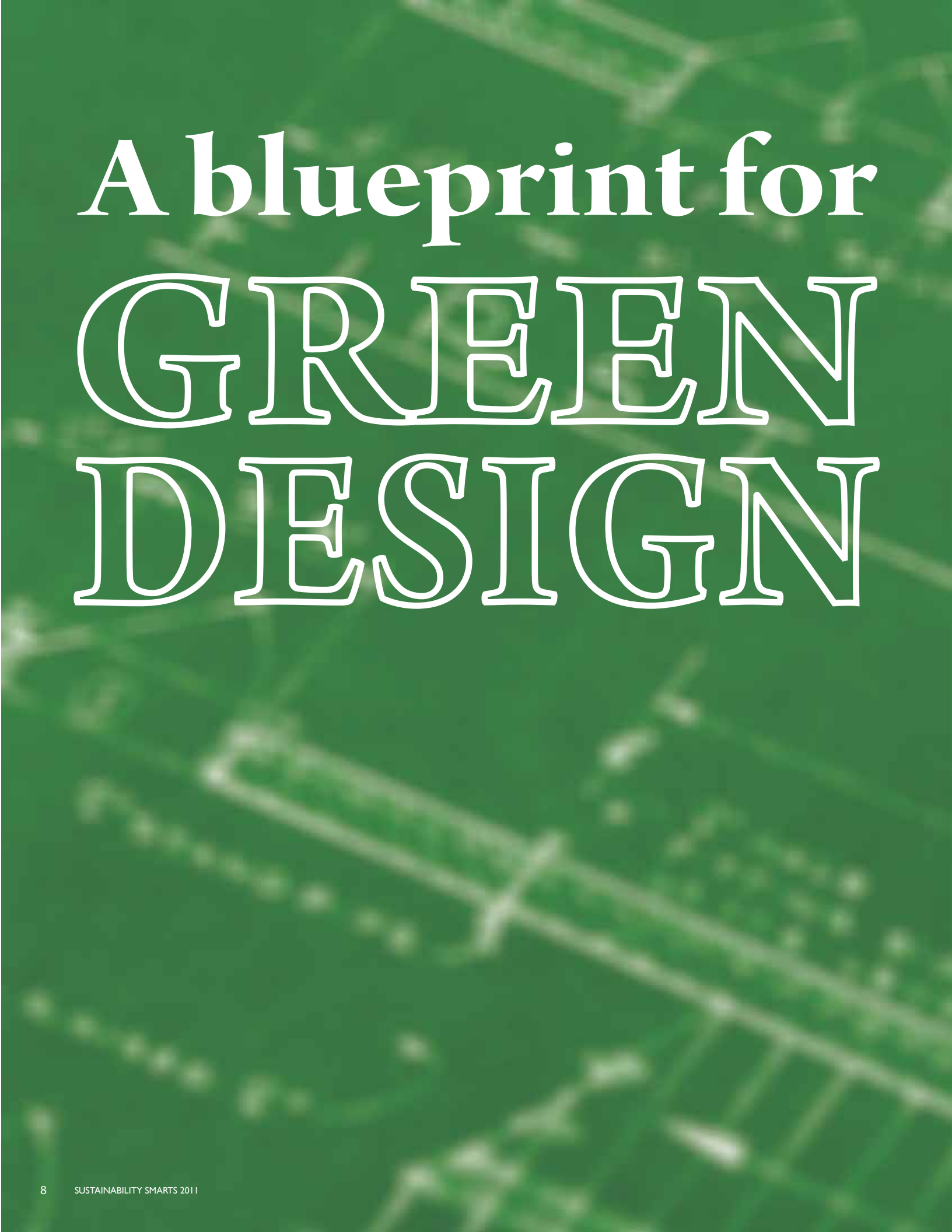
Sustainability Smarts examines the Social Change Model for Leadership Development in connection with a sustainable student leader on a college campus.

Environmental



The most commonly addressed sustainability notion is the environment. Recycling, building green, community gardens, clean energy—these are all environmental concepts. Concerns addressed in this area are those affecting everyday surroundings, ensuring that the earth will be better for future generations as it is today.


"Nature provides a free lunch, but only if we control our appetites."
–William Ruchelshaus



A blueprint for GREEN DESIGN

BY ELIZABETH STRINGER

The buzz about the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) has been prevalent for several years. It seems that each time a union is built or renovated, a goal of the project is to achieve LEED certification. This is not surprising because higher education institutions are implementing green building policies. The 2011 College Sustainability Report Card indicated that 79 percent of responding schools had such a policy; additionally, 57 percent of the institutions have at least one LEED-certified building on campus. And as of January 2011, of the 676 institutions that had signed the American College & University President's Climate Commitment, 74.3 percent had committed to "establish a policy that all new campus construction will be built to at least the U.S. Green Building Council's LEED Silver standard or equivalent."

But what does LEED certification really mean? For those who may be unfamiliar with LEED, it may be a daunting—yet rewarding—task to discover what features, policies, and practices will assist in reaching certification.

Defining LEED

According to the U.S. Green Building Council (USGBC) website, "LEED is an internationally recognized green building certification system, providing third-party verification that a building or community was designed and built using strategies aimed at improving performance across all the metrics that matter most: energy savings, water efficiency, CO_2 emissions reduction, improved indoor environmental quality, and stewardship of resources and sensitivity to their impacts."

A suite of rating systems is offered to cover all bases of potential green buildings and not just those that are newly constructed or undergoing a major renovation. The LEED rating systems include new construction; existing buildings: operations and maintenance; commercial interiors; core and shell; schools (K–12); retail; healthcare; homes; and neighborhood development.

The most recent version of the rating systems is LEED v3, released in 2009 and updated in late 2010. Four levels of certification—certified, silver, gold, and platinum—may be achieved in each of these rating systems based on the number of points a building earns. A building is judged on five criteria: sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Additionally, bonus points may be earned in the innovation in design and regional priority categories. Each criterion can earn a building a set amount of points (out of 100 possible). Each rating system has its own level of points for each criterion. It should be noted that prior to a building even being considered for LEED certification, it must meet all prerequisites for its desired rating system.

In LEED v3, a building needs to earn 40 points to receive the basic certification. More points earn a building a higher rating: 40–49, LEED Certified; 50–59, LEED Silver; 60–79, LEED Gold; 80 or more, LEED Platinum.

The LEED rating system most applied in the university setting is for new construction; LEED for Existing Buildings may also be used when a union chooses to update its sustainable features without undergoing a major renovation.

LEED for New Construction

LEED for New Construction is the most widely known version of the rating system suite. It outlines requirements for new builds as well as any major renovation that occurs. Many unions undergoing renovation and construction projects in the last five years have sought some sort of LEED certification from this rating system.

As mentioned previously, in LEED v3, there are 100 possible base points and 10 possible bonus points. The points break down for new construction is as follows: sustainable sites, 26; water efficiency, 10; energy and atmosphere, 35; materials and resources, 14; indoor environmental quality, 15; innovation in design, 6 (bonus); and regional priority, 4 (bonus). Please refer to Table 1 for a further breakdown of the points and prerequisites.

In the past few years, several unions strived for LEED certification, and two unions' commitment to sustainability earned their building particularly high marks. A look at these unions' achievements may help provide guidance for other buildings that desire to become certified.

THE OHIO UNION, THE OHIO STATE UNIVERSITY

The new Ohio Union opened on March 29, 2010. However, when the plans for the new Ohio Union were drawn up and the sustainable features decided upon, the most recent version of the LEED rating system was Version 2.2. This is the version upon which the Ohio Union's certification is based.

LEED Version 2.2 is slightly different than LEED v3. In Version 2.2, the maximum amount of points is 69; essentially, the content is similar, but items are worth fewer points.

The Ohio Union received 35 points under Version 2.2, earning a LEED Silver certification. The following is a look at an array of LEED credits earned by the Ohio Union with additional information on how the building achieved each goal. The Ohio Union offers a webpage dedicated to explaining its LEED certification: *http://ohiounion.osu.edu/about_the_union/green/leed.*

Site Selection (Sustainable Sites, 1 point)

According to the USGBC, the intent of offering credit for site selection is "to avoid the development of inappropriate sites and reduce the environmental impact from the location of a building on a site."

The Ohio Union earned this credit as it was not built on prime farmland, wetlands, parkland, habitat for endangered species, or within a 100-year flood zone.

Additionally, the Ohio Union received recognition for building on its existing footprint. Prior to construction, the old Ohio Union was completely demolished. And while the new footprint of the building was slightly expanded, many of the trees that needed to be removed were repurposed as wood for the building, said Ohio Union Assistant Director Eve Esch.

Alternative Transportation – Public Transportation Access (Sustainable Sites, 1 point)

In an effort to "reduce pollution and land development from automobile use," the USGBC allows for two options that will earn the building a point for alternative transportation sources—close proximity to a rail station or bus stop.

According to Coordinator of Student Involvement Kai Landis, the Ohio Union has more than two bus lines within a quarter-mile. These buses, run by the Columbus Ohio Transit Authority, have stops around campus as well as near many local attractions, providing the campus community a nonautomobile travel option.

"Because of the creative usage of windows, we are able to save on indoor lighting by depending upon natural light."

Alternative Transportation – Bicycle Storage & Changing Rooms (Sustainable Sites, 1 point)

The Ohio Union has bicycle racks for storage while on campus as well as showers available for bicyclers if needed.

"It encourages more environmentally friendly transportation options," Esch said.

Stormwater Design – Quality Control (Sustainable Sites, 1 point)

While the average person may not consider stormwater a hazard, it does pose potential threats. The U.S. Environmental Protection Agency (EPA) reports that as rain and snowmelt "runoff flows over the land or impervious surfaces (paved streets, parking lots, building rooftops), it accumulates debris, chemicals, sediment, or other pollutants that could adversely affect the water quality if the runoff is discharged untreated."

The recommended treatment for stormwater is best management practices or BMPs; the EPA has published BMPs for a variety of practices, including construction and post-construction. The Ohio Union, in the city of Columbus, is employing a BMP to treat the water prior to it reaching the city water system.

Water Use Reduction: 20% Reduction (Water Efficiency, 1 point)

To increase water efficiency in a building, the USGBC offers points based on the water reduction achieved by the building. The Ohio Union earned one point by reducing water use in the new building by at least 20 percent (based on average water use for a similar building).

By using green water fixtures, the union actually reduced its water use by 42.2 percent, according to Landis. These fixtures include low-flow lavatories, kitchen sinks, shower heads, and urinals.

Optimize Energy Performance (Energy & Atmosphere, 1–10 points)

Much akin to the water savings mentioned, the USGBC expects an energy reduction when compared to a similar building. Points in this category are offered on a sliding scale; a 10.5 percent energy reduction scores a building just one point, but a 42 percent difference would earn 10 points.

The Ohio Union achieved a 20 percent energy reduction. This was done through the use of programmable lighting and HVAC as well as lighting sensors.

"Because of creative usage of windows, we are able to save on inside lighting by depending upon natural light. On the reverse, we are able to help 'light' the outside of the building at night by having light from inside shine through," Esch said.

photo by Brad aFeinknof

■ The Ohio Union at The Ohio State University opened on March 29, 2010 as a LEED Silver-certified building.

Additionally, Landis noted that the energy savings were calculated using the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) energy cost budget method.

Materials Reuse (Materials & Resources, 1 point)

When reusing and repurposing existing building materials there is less demand for new materials to be created and a reduction of waste. When the old Ohio Union was completely demolished, much of the materials were salvaged.

Esch reported that the new facility's wood flooring, stone fireplaces, and stone outdoor patios were all created using materials from the original building. Additional materials not used in the construction were donated to Habitat for Humanity, which was able to sell the items for around $45,000.

Recycled Content (Materials & Resources, 1 point)

Once again, to cut down on the creation of new products, points are awarded for using materials with recycled content. The Ohio Union was constructed with 25 percent recycled materials.

"For every one ton of plastic that is recycled, we save the equivalent of two peoples' energy use for one year, the amount of water used by one person in two months time, and save 2,000 pounds of oil. A ton of glass produced from raw materials creates 384 pounds of mining waste while using 50 percent recycled glass cuts the waste by 75 percent," states the Ohio Union website.

Regional Materials (Materials & Resources, 1 point)

According to the USGBC, using regional materials supports "the use of indigenous resources" and reduces "the environmental impacts resulting from transportation." During its construction, the Ohio Union used at least 20 percent regional materials.

Seventy-six percent of the building's furniture, fixtures, and equipment vendors came from local companies, said Esch. Additionally, more than 260 Ohio companies were involved in the building process, and 98 percent of labors costs from the construction were through Ohio businesses.

Environmental Tobacco Smoke Control (Indoor Environmental Quality, Prerequisite 2)

To achieve this prerequisite, the Ohio Union is a smoke-free building; no one is allowed to smoke within 25 feet of an entrance or window. A growing trend on the campus and in the state of Ohio is to maintain smoke-free buildings; thus, the Ohio Union wanted to implement this as well, said Esch.

Outdoor Air Delivery Monitoring (Indoor Environmental Quality, 1 point)

To ensure the healthiness of the air delivered to the building, the Ohio Union features a monitoring system, "complete with an audible alarm" to "detect carbon dioxide levels and to allow for ventilation adjustments in order to sustain occupant comfort and well-being," according to the Ohio Union website.

Construction Indoor Air Quality Management Plan – During Construction (Indoor Environmental Quality, 1 Point)

Air quality is not just a concern after construction when the building is occupied. Indoor air quality should be maintained during construction as well for the safety and well-being of the workers and any employees who may be in and out during this phase.

The Ohio Union ensured the air quality during construction by protecting air handling equipment and ductwork with filters and source pollutant controls.

Innovation in Design (Innovation & Design Process, 1–4 points)

This category was designed to "provide design teams and projects the opportunity to achieve exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System," according to the USGBC.

The Ohio Union was awarded points in this category through the creation of its pulper system, which allows the building to save on food waste and allow it to be repurposed. The union partners with "a local friend of the environment, Kurtz Brothers, who reuses our waste in agricultural uses," Esch said.

From July to November 2010, 19.26 tons of pulp were sent to the Kurtz Brothers composting facility, according to Esch. She also noted that 25.04 tons of baled corrugated cardboard and 58.9 tons of recycling were recycled during the same period.

University sustainability goals and student interest kept the Ohio Union planning committee focused on incorporating green elements into the building's design. Now with the LEED Silver certification, Esch said everyone is proud of the accomplishment.

"We wanted to make sure the building was the best it could be," she said. "We've seen some students showing off the building to their family members and pointing

"We've seen some students showing off the building to their family members and pointing out the display and explaining that it's a green building."

TABLE 1

LEED FOR NEW CONSTRUCTION

Requirement	Points
SUSTAINABLE SITES	26 possible points
Light Pollution Reduction	R
Site Selection	1
Development Density and Community Connectivity	5
Brownfield Redevelopment	1
Alternative Transportation – Public Transportation Access	6
Alternative Transportation – Bicycle Storage and Changing Rooms	1
Alternative Transportation – Low-Emitting and Fuel-Efficient Vehicles	3
Alternative Transportation – Parking Capacity	2
Site Development – Protect or Restore Habitat	1
Site Development – Maximize Open Space	1
Stormwater Design – Quantity Control	1
Stormwater Design – Quality Control	1
Heat Island Effect – Nonroof	1
Heat Island Effect – Roof	1
Light Pollution Reduction	1
WATER EFFICIENCY	10 possible points
Water Use Reduction	R
Water Efficient Landscaping	2–4
Innovative Wastewater Technologies	2
Water Use Reduction	2–4
ENERGY AND ATMOSPHERE	35 possible points
Fundamental Commissioning of Building Energy Systems	R
Minimum Energy Performance	R
Fundamental Refrigerant Management	R
Optimize Energy Performance	1–19
On-site Renewable Energy	1–7
Enhanced Commissioning	2
Enhanced Refrigerant Management	2
Measurement and Verification	3
Green Power	2
MATERIALS AND RESOURCES	14 possible points
Storage and Collection of Recyclables	R
Building Reuse – Maintain Existing Walls, Floors and Roof	1–3
Building Reuse – Maintain Existing Interior Nonstructural Elements	1
Construction Waste Management	1–2
Materials Reuse	1–2
Recycling Content	1–2
Regional Materials	1–2
Rapidly Renewable Materials	1
Certified Wood	1
INDOOR ENVIRONMENTAL QUALITY	15 possible points
Minimum Indoor Air Quality Performance	R
Environmental Tobacco Smoke (ETS) Control	R
Outdoor Air Delivery Monitoring System	1
Increased Ventilation	1
Construction Indoor Air Quality Management Plan – During Construction	1
Construction Indoor Air Quality Management Plan – Before Occupancy	1
Low-Emitting Materials – Adhesives and Sealants	1
Low-Emitting Materials – Paints and Coatings	1
Low-Emitting Materials – Flooring Systems	1
Low-Emitting Materials – Composite Wood and Agrifiber Products	1
Indoor Chemical and Pollutant Source Control	1
Controllability of Systems – Lighting	1
Controllability of Systems – Thermal Comfort	1
Thermal Comfort – Design	1
Thermal Comfort – Verification	1
Daylight and Views – Daylight	1
Daylight and Views – Views	1
INNOVATION IN DESIGN	6 possible points
Innovation in Design	1–5
LEED Accredited Professional	1
REGIONAL PRIORITY	4 possible points
Regional Priority	1–4

**"R" denotes a prerequisite*
Source: http://www.usgbc.org/ShowFile.aspx?DocumentID=7244

■ The LEED-Gold certified Davis Center at the University of Vermont opened in 2007.

photo courtesy of Bob Handelman, Jeffery Wakefield

out the display and explaining that it's a green building."

DUDLEY H. DAVIS CENTER, UNIVERSITY OF VERMONT

The University of Vermont (UVM) adopted a green building policy in 2005, which was upgraded to require all new buildings to achieve at least LEED Silver certification in 2007. The Dudley H. Davis Center went beyond this requirement and became the first college union in the United States to receive LEED Gold certification.

The achievement of LEED Gold certification for the Davis Center goes hand-in-hand with long-standing university missions. Even though it was just a few years ago that green building became a concern on campus, sustainability and environmentalism were at the forefront of the UVM campus and community mindset before that.

"The University of Vermont has a renowned environmental program, and Vermont has been green-minded well before environmentalism became a campus trend," Marketing Director Katherine Strotmeyer said. "While we are not an academic classroom facility, it was clear that there was a valuable opportunity to use the Davis Center as an environmental teaching tool to complement the academic mission of the university."

The Davis Center opened in August 2007. The LEED rating system used was Version 2.1. Out of the possible 69 points, the Davis Center earned the 39 needed to reach LEED Gold certification. What follows is a look at some of the points earned by the Davis Center and information on how each was achieved. Additional information about the Davis Center LEED certification may be found at *www.uvm.edu~davis*.

Alternative Transportation – Public Transportation Access (Sustainable Sites, 1 point)

The Campus Area Transportation System has a stop directly in front of the Davis Center.

"These buses, which run on compressed natural gas and/or biodiesel, make it easy to get around campus," Strotmeyer said. "Blirp It, a web-based application developed by students, makes it easy to track the location of buses on campus."

Additionally, the Chittenden County Transportation Authority has a bus that

picks up in front of the Davis Center. These buses also run on biodiesel, and anyone with valid university identification is able to ride for free.

Alternative Transportation – Bicycle Storage & Changing Rooms (Sustainable Sites, 1 point)

According to Strotmeyer, the Davis Center offers 100 outdoor spaces for bicycles as well as showers on every floor of the building, located in the gender-neutral bathrooms.

"[This makes] it easier for people to walk, run, or bike to and from campus," she said.

Stormwater Management – Treatment (Sustainable Sites, 1 point)

An 18,000-square-foot green roof atop the Davis Center is filled with drought-resistant and tall ornamental grasses—none of which need to be watered. These plants also do not need to be fertilized, eliminating another possible water contaminant.

If it rains, the green roof "absorbs the stormwater and uses the nutrients it contains to nourish the plants," Strotmeyer said. "Without the green roof, this stormwater would run off and carry salts and dissolved chemical nutrients into Lake Champlain, polluting it and contributing to unwanted algae blooms." The green roof is able to absorb up to 42 pounds of water per cubic foot.

During colder months, stormwater runoff and snowmelt may contain the salt often used to melt snow and ice. The Davis Center has an answer for this issue as well.

"The driveway to the loading dock on the first floor has a special feature that keeps it free of ice in the winter without the use of salt," Strotmeyer said. "Radiant tubing under the driveway transfers heat from hot water to the driveway to prevent ice formation. The tubing turns on automatically when sensors detect moisture at low temperatures and turns off when conditions are dry. Storm water runoff from the driveway is cleaner and less harmful to Lake Champlain because the radiant tubing eliminates the need for road salt."

The land around the Davis Center is mostly green space. Stormwater and snowmelt are able to filter down instead of running off into the nearby lake. And the Davis Center sends its wastewater through city pipes to the Burlington Wastewater Treatment Plant; the company treats the water, and then discharges it into Lake Champlain.

Water Efficient Landscaping – No Potable Use or No Irrigation (Water Efficiency, 1 point)

The USGBC states that the reason for water-efficient landscaping is to "limit or eliminate the use of potable water for landscape irrigation." The Davis Center earned a point for eliminating the need for irrigation; they also earned another related point (Water Efficient Landscaping – Reduce by 50%) for this achievement.

"The grounds around the Davis Center are planted with drought-resistant grasses and shrubs that are native to Vermont," Strotmeyer said. "This eliminates the need to irrigate and strengthens the connection between the campus and the local nature."

Water Use Reduction – 30% Reduction (Water Efficiency, 1 point)

The Davis Center employs several methods to achieve a 30 percent water reduction when compared to a similar building.

The bathrooms feature "waterless urinals and water-efficient toilets that use 1.6 gallons per flush [of] conserve water," Strotmeyer said. "All of the bathroom sinks have automatic faucets that dispense warm water at a rate of 0.5 gallons per minute when they sense a user's hands and turn off when no one is using them."

Additionally, the showerheads located in the gender-neutral bathrooms are low-flow, only using 1.5 gallons of water per minute compared to the 2.5 gallons of water per minute a typical showerhead uses.

Water reduction is also a concern when it comes to cleaning. The custodial staff uses microfiber cloths and mops.

"Microfiber requires less water and chemical cleaning agents to pick up dirt and spills than conventional options, and it requires less time in the dryer than towels, thus saving both water and electricity," Strotmeyer said.

The front-loading washer used by the custodial staff has a load-size sensor that automatically adjusts the water needed per load. And the four carpet cleaners used in the Davis Center were chosen for their water-conservation and energy-efficient features.

Optimize Energy Performance (Energy & Atmosphere, 1–10 points)

Credits for optimizing energy performance are earned on a sliding scale. The Davis Center received seven points, meaning that it reduced energy by at least 45 percent when compared to a similar building. Strotmeyer said the building actually uses around 52 percent less energy.

The Davis Center purchases its electricity from the Burlington Electric Department, which buys more than 60 percent of its electricity from renewable sources. Overall, the Davis Center uses about 31 percent less electricity for lighting than an average building of comparable size.

"Windows and skylights in the building maximize natural light and thus minimize the need for electric light during the day," Strotmeyer said. "Computerized lighting control systems automatically adjust light levels and shut off lights when rooms are unoccupied."

The heating and cooling systems in the Davis Center are also optimized for energy performance; according to Strotmeyer, the building uses 59 percent less energy for heating and cooling compared to other facilities.

Both the steam used to generate heat and the chilled water used to cool the Davis Center come from the university's central heating and cooling plant. The fuel for the steam is 95 percent natural gas; the chilled water is generated by using excess steam.

Rooms at the Davis Center contain carbon dioxide sensors able to detect the presence of people in the room. The heating or cooling system will shut off to rooms where the presence of people is not detected. Also, if a window is opened in the room, computerized sensors will shut off the heating or cooling to it.

In addition, much of the equipment in the Davis Center is energy efficient.

"The kitchens have special exhaust fans that automatically slow down when cooking demands are low and speed up only when cooking volume increases," Strotmeyer said. "The public computers are all Apple iMacs. They use energy very efficiently. Of-

TABLE 2

LEED FOR EXISTING BUILDINGS

Requirement	Points
SUSTAINABLE SITES	26 possible points
LEED Certified Design and Construction	4
Building Exterior and Hardscape Management Plan	1
Integrated Pest Management, Erosion Control, and Landscape Management Plan	1
Alternative Commuting Transportation	3–15
Site Development – Protect or Restore Open Habitat	1
Stormwater Quantity Control	1
Heat Island Effect – Nonroof	1
Heat Island Effect – Roof	1
Light Pollution Reduction	1
WATER EFFICIENCY	14 possible points
Minimum Indoor Plumbing Fixture and Fitting Efficiency	R
Water Performance Management	1–2
Additional Indoor Plumbing Fixtures and Fitting Efficiency	1–5
Water Efficient Landscaping	1–5
Cooling Tower Water Management – Chemical Management	1
Cooling Tower Water Management – Nonpotable Water Source Use	1
ENERGY AND ATMOSPHERE	35 possible points
Energy Efficiency Best Management Practices – Planning, Documentation, and Opportunity Assessment	R
Minimum Energy Efficiency Performance	R
Fundamental Refrigerant Management	R
Optimize Energy Efficiency Performance	1–18
Existing Building Commissioning – Investigation and Analysis	2
Existing Building Commissioning – Implementation	2
Existing Building Commissioning – Ongoing Commissioning	2
Performance Measurement – Building Automation System	1
Performance Measurement – System Level Metering	1–2
On-site and Off-Site Renewable Energy	1–6
Enhanced Refrigerant Management	1
Emissions Reduction Reporting	1
REGIONAL PRIORITY	4 possible points
Regional Priority	1–4

Requirement	Points
MATERIALS AND RESOURCES	10 possible points
Sustainable Purchasing Policy	R
Solid Waste Management Policy	R
Sustainable Purchasing – Ongoing Consumables	1
Sustainable Purchasing – Electric-Powered Equipment	1
Sustainable Purchasing – Furniture	1
Sustainable Purchasing – Facility Alterations and Additions	1
Sustainable Purchasing – Reduced Mercury in Lamps	1
Sustainable Purchasing – Food	1
Solid Waste Management – Waste Stream Audit	1
Solid Waste Management – Ongoing Consumables	1
Solid Waste Management – Durable Goods	1
Solid Waste Management – Facility Alterations and Additions	1
INDOOR ENVIRONMENTAL QUALITY	15 possible points
Minimum Indoor Air Quality Performance	R
Environmental Tobacco Smoke (ETS) Control	R
Green Cleaning Policy	R
Indoor Air Quality Best Management Practices – Indoor Air Quality Management Program	1
Indoor Air Quality Best Management Practices – Outdoor Air Delivery Monitoring	1
Indoor Air Quality Best Management Practices – Increased Ventilation	1
Indoor Air Quality Best Management Practices – Reduce Particulates in Air Distribution	1
Indoor Air Quality Best Management Practices – Indoor Air Quality Management for Facility Alterations and Additions	1
Occupant Comfort – Occupant Survey	1
Controllability of Systems – Lighting	1
Occupant Comfort – Thermal Comfort Management	1
Daylight and Views	1
Green Cleaning – High Performance Cleaning Program	1
Green Cleaning – Custodial Effectiveness Assessment	1
Green Cleaning – Purchase of Sustainable Cleaning Products and Materials	1
Green Cleaning – Sustainable Cleaning Equipment	1
Green Cleaning – Indoor Chemical and Pollutant Source Control	1
Green Cleaning – Indoor Integrated Pest Management	1
INNOVATION IN OPERATIONS	6 possible points
Innovation in Operations	1–4
LEED Accredited Professional	1
Documenting Sustainable Building Cost Impacts	1

*"R" denotes a prerequisite

Source: http://www.usgbc.org/ShowFile.aspx?DocumentID=7245

"We mainly wanted to show that LEED for Existing Buildings is different than that for New Construction."

fice, kitchen, and cleaning equipment in the building are Energy Star-qualified."

Innovation in Design (Innovation & Design Process, 1–4 points)

The Davis Center received the maximum four points for incorporating innovative sustainable processes into the building. One such development is the Green Building Education Program.

"With sustainability and education at the core of the Davis Center's mission, utilizing the building as a teaching tool became an essential part of construction and operations today," Strotmeyer said. "In addition to the Sodexo Sustainability Gallery, green facts are placed throughout the building and tell the story of the Davis Center. Online tours bring the LEED features to life. One audio tour even turned into a class project. Staff members are all trained to give tours of the building, including green features of the center."

Incorporating sustainable features did not stop when the Davis Center opened. According to Strotmeyer, retroactive upgrades include switching to environmentally friendly toilet paper, installing water bottle refill stations, and working with eco-reps to bring more green programs to the union.

"By naming environmental stewardship in our mission statement, LEED certification became not an end goal, but a starting point for further programs," Strotmeyer said. "In the areas where we can still improve, our commitment to sustainability opens doors to new ideas and conversation. Ultimately, our goal is to create a meaningful place that is a source of pride for the university community and a representation of campus and academic life."

LEED for Existing Buildings: Operations and Maintenance

Not all institutions can or desire to undergo a major renovation or new build project. LEED for Existing Buildings allows these institutions to make fixes to the existing structure that will improve the overall greenness of the building, focusing on the operations and maintenance within the building.

The points breakdown for the LEED v3 rating system for Existing Buildings is slightly different than that used for New Construction: sustainable sites, 26; water efficiency, 14; energy and atmosphere, 35; materials and resources, 10; indoor environmental quality, 15; innovation in operations, 6 (bonus); and regional priority, 4 (bonus). Please refer to Table 2 to see more in-depth information regarding the points and prerequisites.

Unlike LEED for New Construction, it is difficult to find a union that is undergoing a LEED for Existing Buildings transformation. But the Indiana Memorial Union at Indiana University is attempting to change that.

In December 2009, the Indiana University Office of Sustainability held an eco-charette, which its website defines as "an intensive planning and design exercise aimed where key stakeholders convene to green an existing or new building."

While the university hopes to eventually certify all its existing buildings, one building had to be chosen to lead the way. "High traffic volume, familiarity, and accessibility make the Indiana Memorial Union the perfect candidate to spearhead the green of Indiana University's existing building stock," according to the *Greening of the IMU* report.

The reasoning behind the eco-charette was to familiarize those in the campus community with LEED for Existing Buildings.

"We mainly wanted to show that LEED for Existing Buildings is different than that for New Construction," Office of Sustainability Director Bill Brown said. "It is not as highly technical. Overall, it is focused on the long-term health and performance of the building."

Brown considers the eco-charette a success; the event provided information about the union and potential changes. The Indiana Memorial Union is working with the Office of Sustainability to determine the next steps in the process to becoming LEED certified. But the project still has have a lot of work ahead.

One issue Brown found was the lack of benchmarking data. Many of the LEED criteria, such as optimizing energy performance or water reduction, require a building to have another location of similar size to use as a comparison.

"Unions are different than your typical campus building," Brown said. "And for LEED, you must start with benchmarks. Right now, we are gathering data on square footage, energy use, baselines that can be used for LEED certification. Then we hope to jump back in the process and make changes to achieve certification."

In the meantime, the Indiana Memorial Union is implementing smaller, low-cost changes to bring the building in line with LEED. According to Brown, any institution could make minor alterations to a building or its policies and be well on the way to LEED certification.

"There are several low-cost or no-cost things you can do," Brown said. "A lot of it has to do with policies—green cleaning policy, purchasing policy, pest management policy."

Also, Brown recommends looking at affordable landscaping improvements. The higher cost items come into play when making considerations for an overhaul of the heating or air conditioning system or other large project.

The *Greening of the IMU* report may be found at *www.indiana.edu/~sustain*.

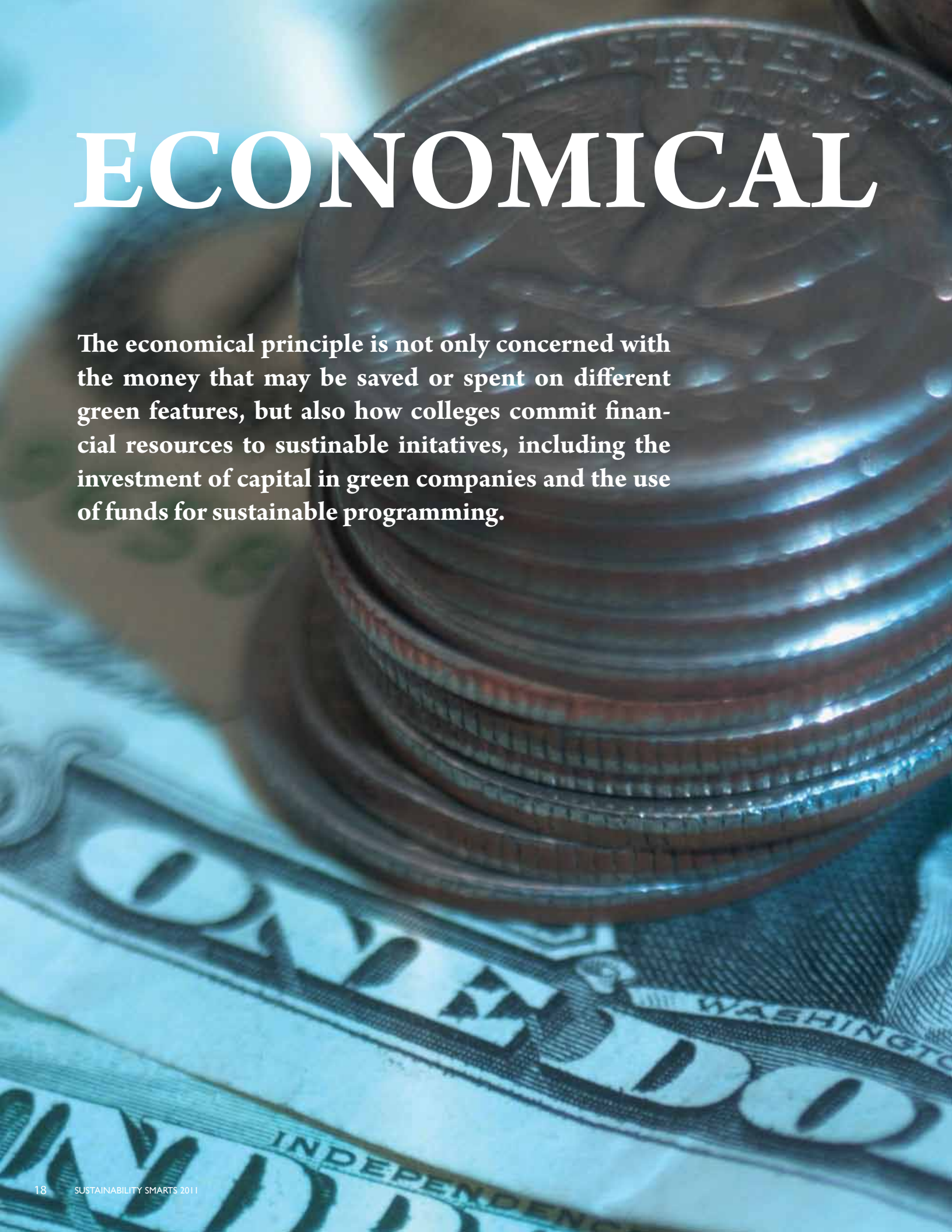
Commit to being green

LEED certification may not be a concern on your campus right now. Finding the budget and support to make large changes can be difficult. But there is no reason not to encourage your campus to take the first step on the road to becoming green: simply commit to sustainability.

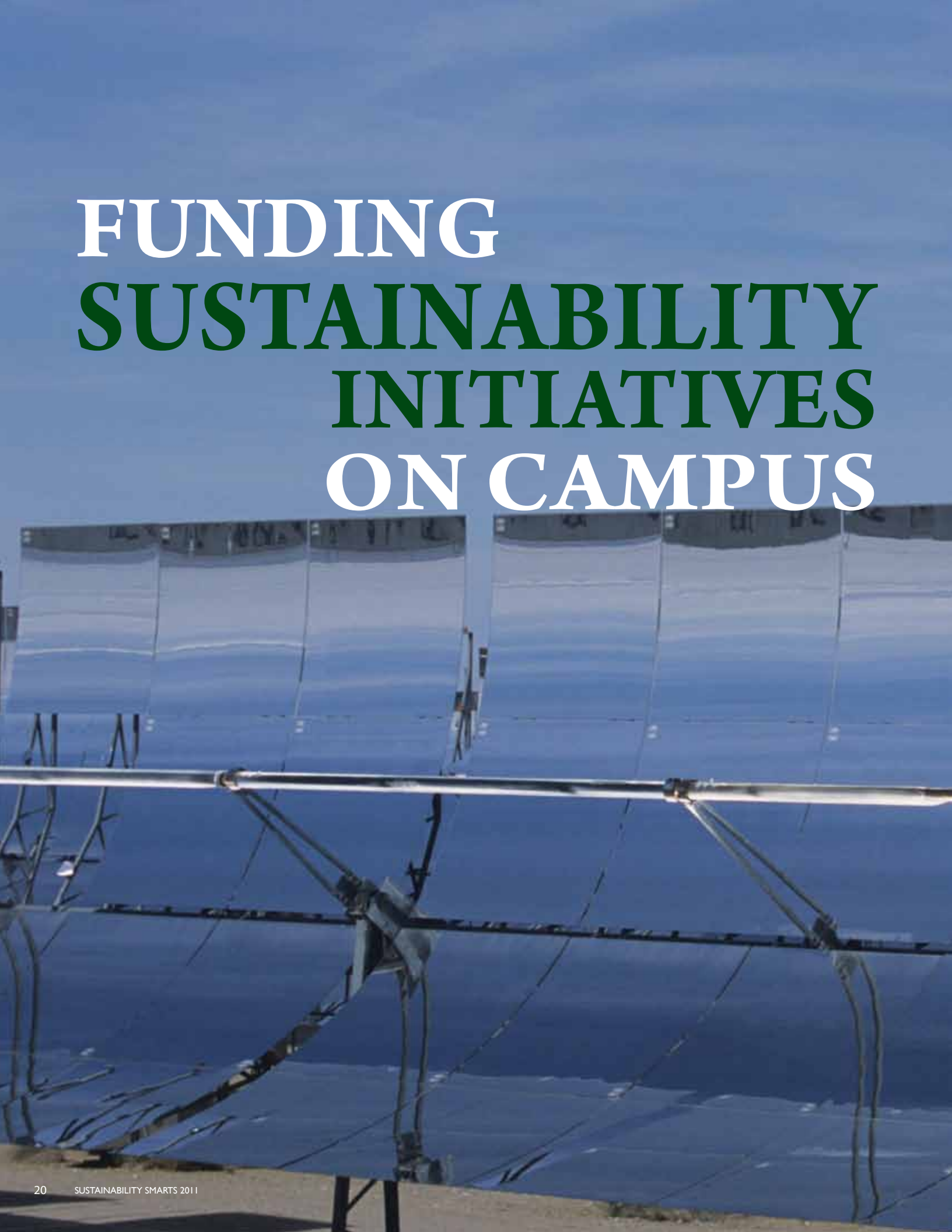
Resources and guidelines for LEED certification may be found at *www.usgbc.org*. ■

ECONOMICAL

The economical principle is not only concerned with the money that may be saved or spent on different green features, but also how colleges commit financial resources to sustinable initatives, including the investment of capital in green companies and the use of funds for sustainable programming.



"Always invest for the long term."
–Warren Buffet



FUNDING SUSTAINABILITY INITIATIVES ON CAMPUS

BY JUSTIN RUDISILLE & KRISTA HARRELL-BLAIR

As sustainability becomes a more prominent topic, colleges and universities have potential to be change agents in the sustainability movement, according to the 2008 article "Higher Education as a Change Agent for Sustainability in Different Cultures and Contexts" in the *International Journal of Sustainability in Higher Education* (*ISHJE*). With the potential to improve the institution's reputation, engender cooperation, and fulfill the school's social responsibility, Charles Maimone, vice chancellor for business affairs at University of North Carolina–Wilmington, described the benefits of financing and advancing sustainability in higher education. These include energy savings, educational opportunities, aid in planning for future development, improving teaching and learning, preparing students for citizenship and careers, attracting new constituents, and saving money and other resources for the institution and society.

In the study "Deterring Sustainability in Higher Education Institutions," published in the 2005 *ISHJE*, researchers found that the barriers to successful development and implementation of sustainability initiatives on campus included, among others: lack of awareness, lack of support from administration, lack of training, lack of policies to promote sustainability, a profits mentality, and lack of funding. Significant obstacles in financing initiatives can inhibit the progress of advancing sustainability practices and policies, while the lack of funding can be a result of the economy and the subsequent budget constraints on campuses.

The current economy can both hinder and help sustainability efforts, as discussed in the 2008 *Chronicle of Higher Education* article "Economic Woes May Hurt Colleges' Green Efforts." The financial crisis provides the opportunity to discuss the economic element of sustainability, further changing the conversation and highlighting the need for institutions of higher education to be socially responsible. While sustainable practices are moving beyond being viewed as a trend, college and university programs on the issue are often underfunded, in part due to "the difficulty in quantifying the return on investment" in some of the programs in which students are most engaged. Additionally, the upfront costs hinder the ability to fully capture the long-term investment returns, according to the article.

This is not unique to U.S. institutions. In a 2010 *ISHJE* article examining the role of higher education in advancing sustainability through interviews with Canadian university presidents, across the board, the presidents were concerned with how to finance sustainability initiatives on campus amid a worsening economy. Budget constraints were cited as a significant barrier, despite potential short- and long-term cost-effectiveness.

In some cases, the culture and availability of funding may be representative of a region or state's political environment. For example, as discussed in a 2007 *ISHJE* article about natural resource extension programs, institutions in Oregon found success in addressing environmental issues because of the favorable political context and support. In contrast, institutions in Alabama experienced resistance from strong political interest groups, especially during times of budget deficits and reductions in higher education. The aforementioned 2008 study in the *ISHJE* also reflected these obstacles in obtaining financial support, finding that colleges and universities might need to pursue funds outside of public and government monies to continue progress, as funding was shifting from public to private support.

However, as put forth by the National Wildlife Federation's 2008 report *Higher Education in a Warming World: The Business Case for Climate Leadership on Campus,* "Whatever misconceptions there may be about cost barriers to launching expensive initiatives, the net-positive experiences of … [many schools] … will prove them wrong." Reviewing 23 projects at a variety of public and private higher education institutions in the 1998 report *Green Investment, Green Return,* the National Wildlife Federation also found that the average savings produced per project was $728,500.

With close connections to students' interests and needs, college unions and student activities departments are likely to encounter numerous proposals for green activities on campus. Whether in facilities and operations or in governance and programming, finding the financial means to support student engagement around the issue may remain a primary challenge. Here, several models for funding sustainability initiativesare discussed, along with practical campus examples.

Contracts with Energy Service Companies

One method of finding the initial funds to take on major sustainability initiatives is through agreements or performance contracts with an energy service company (ESCO). This method works well for colleges and universities, as it can require little to no upfront investment for large and expensive projects. As described in the 2008 National Wildlife Federation report, once hired by an institution to plan, finance, design, and implement a project, "These companies recover costs and make a profit based on project savings. They offer a 'turnkey' deal, having the expertise for handling all aspects of a complex project and assuming all technical and financial risks. In the end, the school reaps continuing savings without having any negative numbers on its balance sheet."

One early example of such a contract was a four-year initiative started in 2000 at the University of Utah. To update some older and inefficient buildings, the institution used a performance contract to build a new chilled water plant in partnership with the Rebuild America and Rebuild Utah programs. The project, totaling $39 million, also included upgrades to light fixtures, fume hoods in laboratories, and low-flow toilets. The overall effort saved the university $6.6 million in energy costs, $400,000 more than anticipated. At the time, the project was one of the largest performance contracts ever carried out by a university, according to the 2003 sustainability news feature "Performance Contract Helps Save Millions in Energy Costs" by the National Association of College and University Business Officers.

Several California State University campuses entered into a solar power purchase agreement with SunEdison, a company that develops, finances, and operates solar energy services, as described in a Poly-Centric news article "New Solar Panels to Power Campus" in August 2010. Through this agreement, which also involved incentives from the California Solar Initiative program, SunEdison financed, installed, and will operate solar panels for 20 years, and in return for hosting the panels, institu-

" … colleges and universities might need to pursue funds outside of public and government monies to continue progress."

tions then will be able to buy energy at or below standard electricity rates through the company. At California State Polytechnic University–Pomona, for example, more than 4,640 solar panels were installed in 2010. Other institutions involved in the contract included Bakersfield, Monterey Bay, and San Bernardino. Overall, the state campuses involved are estimated to produce 4 megawatts of zero-emission solar photovoltaic power each year, though this is just a small percentage of the total energy needs. This project has been implemented in addition to the ongoing partnership between the University of California system, the California State University system, and four investor-owned utility companies in the state (i.e., the UC/CSU/IOU Energy Efficiency Partnership). The program website reported that this multiphase agreement has reduced annual greenhouse gas emissions by more than 80,000 metric tons since 2005 through energy efficiency projects.

While most examples of performance contracts require minimal investment from the institutions, some do demand university funds. In December 2010, the University of Kentucky announced it had initiated an energy savings performance contract with AMERESCO, a local energy service company, to manage the implementation of a $25 million project, which will conserve energy and improve efficiency in 61 buildings on campus. Bringing expertise in the improvement of energy and water management, AMERESCO will install a variety of retrofits, focusing on lighting, water usage, and mechanical systems during 2011. The contract is initially funded by university bonds, while energy service companies such as AMERESCO assume some of the risk by guaranteeing that the savings will pay back the capital investment. Anticipated to result in $2.43 million in annual utility savings, the project supports the overall university goal of reducing its energy consumption by 10–15 percent.

Performance contracts can be effective ways to achieve a variety of campus goals—specific installations or campus-wide upgrades to lighting, HVAC systems, facility retrofits, etc. In fact, in its 2009 *Sustainability Annual Report*, the sustainability committee at the University of North Carolina–Wilmington recognized this potential by

■ Contracts with energy service companies allow experts to evaluate the best way to lessen the institution's energy dependence. Ideas range from updating light bulbs and fixtures to installing solar panels on campus grounds.

identifying a 2009–14 goal of increasing the use of performance contracting on campus. Generally, these service agreements are designed to increase efficiency and reduce the consumption of energy. They tend to be on a large scale, but because they are primarily driven by administration, performance contracts often offer little student involvement. However, smaller level agreements with local businesses can achieve other sustainability goals, such as partnering with car-rental services on a ride-sharing program or with local hardware stores for discounts on Energy Star-rated appliances.

Revolving Loan Funds

One funding model, commonly referred to as a sustainability revolving loan fund, not only has many campus success stories, but also the financial stability it can provide reflects the basic principles of sustainability. The 2007 Association for the Advancement of Sustainability in Higher Education's (AASHE) *Creating a Campus Sustainability Revolving Loan Fund: A Guide for Students* described revolving loan funds: "An initial sum of money is set aside for the fund. The fund then finances sustainability projects that have a quantifiable monetary savings or return … A portion of the returns from these projects is reinvested into the fund until the project is paid off. The money is then reused for more projects." Of the 322 participants in the 2011 College Sustainability Report Card, 22 percent reported having established a sustainability revolving fund.

Administration of these funds can vary based on institutional interests. Some are intended to grow over time by expecting projects to reinvest more than the amount of the initial loan, while others remain stable and self-sustaining. Some funds receive the initial pool of money through student government or fee allocations, others obtain funding from academic or administrative departments, and others still build the fund through external contributors such as alumni or grants. Likewise, various models are used to select fund recipients. However, the key benefits are consistent. Innovative projects that may never otherwise be implemented have the opportunity to reduce the institution's negative environmental impact. With the expectation of financial return, the initial investment ultimately leads to ongoing savings. And the process empowers students to be involved in practical and educational activities.

An early example of such a practice in higher education was the establishment of the Harvard University Green Campus Loan Fund in 2002. Receiving an initial allocation of $3 million from the Harvard bank, the program has grown into a $12 million revolving loan fund that has provided start-up capital for more than 150 projects. The median return on investment of these projects is 27 percent, according to the university website. Other early examples from the AASHE guide included the Connecticut College Energy Conservation & Efficiency Fund, which started in 2005 with an alumni/trustee donation of $1,000 to a student organization, and the Macalester College Clean Energy Revolving Fund, which received a total of $27,000 from the college's student government and environmental studies department to start the program in 2006.

The Penn Green Fund has operated for several academic terms at the University of Pennsylvania, awarding one-time seed funds of up to $50,000 to innovative ideas from students, faculty, and staff. The program website indicates that applicants can submit a proposal for projects outlining the intended outcomes, evaluation plan, project participants and beneficiaries, timeline, detailed cost and savings estimates, and a sponsorship letter from the head of the department or center involved. Supported by funding from the Office of the Provost and the Division of Facilities and Real Estate Services, all projects that generate financial savings are expected to replenish the Green Fund for future projects by repaying the amount awarded. Example recipients have included an LED spotlight installation in a theater on campus, energy retrofits and win-

■ Startup costs for campus gardens is just one of the many projects for which funds designated for sustainability on campus may be used.

dow restorations on campus fraternity and sorority residences, a desktop power management system for information systems and computing, and the installation of a submetering system to monitor energy use in a new campus facility. The Penn Green Fund projects are also expected to align with the broader goals and objectives of the university's climate action plan.

This funding trend has expanded beyond the United States as the University of West Sydney recently established the Sustainable UWS Rolling Fund. To be eligible, proposed initiatives must demonstrate at least one of the following criteria: reductions in greenhouse gas emissions, reductions in energy use, alternate energy sources, reductions in water use, reductions in waste and pollutants, or behavioral change that will reduce environmental impacts. The funding was provided as a pilot program through the institution's Office of Planning and Quality, and selected projects that will result in quantifiable savings or benefits have a stipulated payback period to keep the fund self-sustaining, according to the Greening UWS administration website.

AASHE provides a step-by-step process for starting a revolving loan fund on campus, which mirrors other standard program development procedures college union and student activities professionals regularly use. The steps include drafting a proposal, building a network of support, setting clear goals, identifying sources for funding, and formalizing the implementation plan. The guide is available online at *http://www.aashe.org/highlights/cerf.php.*

Awarding Grants through Other Campus Funds

While the previous sections have outlined potential models for financing sustainability projects, both performance contracts and revolving loan funds can require institutional or administrative commitment at a more macro level than individual units or departments. While it is ideal for projects to be driven by institutional priorities, finding the initial funding for large projects might still remain as a barrier. However, other funding opportunities do exist. Campus InPower—a nonprofit consulting firm that provides college students with tools to pay for large-scale sustainability projects—identified seven funding mechanisms to achieve these goals in its 2008 *Raise the Funds Toolkit.* These include student fees, internal campus banks, administrative funds, external grants, and alumni funds, in addition to the two previously discussed.

Student fees have been a basic funding source for many student activities and college union organizations for some time, and over the past decade, this same model increasingly has been applied to support sustainability. Typically voted on and self-assessed by the student population, students pay a fee each term, and the total collection of these fees creates a pool of money that can be used to award grants or special funding to sustainability projects. This can be a quick way to guarantee funding for such programs. Alternatively, other campuses might find administrative funds more effective, through which an administration or academic department allocates a portion of its budget toward green activities. The monies from either of these models can then be used to award within-campus grants to support projects.

During the fall 2010 semester, a new student organization formed at Wesleyan University, the Green Fund Committee, and collected a $15 fee from students, who could voluntarily opt out if they did not want or did not have the means to contribute. Described on the organization's website as a "student-financed, student-elected, and student-managed fund," the campaign resulted in a pool of $40,000, which is now available to fund project proposals. The Green Fund Committee is intended to finance projects that, while effective at achieving the goals of sustainability, might not be a financially viable initiative for other institutional funding opportunities. Potential projects include purchasing clean energy or subsidizing discounts for coffee purchases made with reusable containers. Though an independent organization, the Green Fund was approved by the student assembly and university board of trustees prior to its implementation.

The student government at North Carolina State University conducted its "Think Outside the Brick" competition in 2010, which encouraged students or organizations to submit proposals for sustainable, environmentally responsible

What to consider when evaluating sustainable initiative proposals

In selecting and prioritizing sustainable projects for implementation, the Presidents Climate Commitment Task Force at California State Polytechnic University–Pomona identified that while the driving goal is reducing emissions, actions must be effective, economical, and supportive of other campus goals. To evaluate the financial component of proposals, the task force considers four items:

- **The capital cost:** One-time investments required by the project that last a long time
- **How long the capital investment will last:** Life of the investment used to convert one-time costs/savings into annualized costs/savings
- **The annual operating cost or savings:** Recurring expenses or savings each year
- **Total cost effectiveness calculations:** Combined operating costs/savings and capital costs/savings providing a look at how financially effective the project will be

While other factors influence the decisions, these considerations provide a framework to help select which projects are the most feasible. Likewise, they can be used to determine how long such programs will take to break even and/or begin resulting in true financial return.

Source: California State Polytechnic University–Pomona 2009 Climate Action Plan http://www.csupomona.edu/~climate/pdf/CPP_CAP_091109.pdf

Investment ideas to help efficiently shrink the campus carbon footprint

Have money for sustainable initiatives, but not sure how to best put it to use? Consider one of these four options that will help the campus reduce its carbon footprint.

1.

Convert to carbon-neutral or lower-carbon energy sources

Energy sources that depend on fossil fuels are a main contributor to campus emissions. Campuses should consider investing in wind, solar, or geothermal energy. Here are some ways to implement:

- Install a wind turbine or solar panels on campus
- Ensure power plant is running efficiently
- Use low-carbon fuels, such as natural gas or biofeuls
- Purchase energy from renewable sources

2.

Update the HVAC system

This can be a major renovation, but updating the HVAC systems will result in money saved down the line. It is best to complete a building audit to determine the best solution for your campus, but some ideas are to:

- Replace fume hoods, steam traps, fans, and motors
- Install an energy control system, such as one that will shut off the air to a room that is not occupied
- Ensure boilers and chillers are updated

3.

Reduce demand on heating, cooling, and lighting

Constantly running the HVAC system or leaving all the lights in a building on is a way to quickly use energy. Changes to the campus culture and demands on these systems may result in an energy reduction:

- Employ setbacks for thermostats; the room temperature does not need to be maintained when few will be in the building, such as on weekends or in the evening
- Ensure insulation, windows, and weather seals are updated
- Use daylighting when possible

4.

Reduce plug loads

Another method to reduce energy use is to cut down on the number of machines that may be plugged in and/or running. Some ideas to help in a plug load reduction are to:

- Install power-down software on equipment
- Place lighting sensors in rooms
- Purchase Energy Star rated appliances

Source: 2008 National Wildlife Federation Report, Higher Education in a Warming World: The Business Case for Climate Leadership on Campus

“ … institutions are demonstrating a willingness to commit financial resources toward sustainable causes, accepting the challenge by trying new and innovative funding methods .”

projects. Participants hoped to receive the $1,000 first prize grant from the student government’s sustainability commission to get started. This program utilized the traditional funding mechanism of allocating a pool of existing money for special funding requests, and created a separate fund specifically for sustainability. The first prize award was provided through the student fees received by the NCSU student government, while recently additional second and third place prizes have been awarded through administrative funds from other offices on campus. The *2009–2010 NC State University Annual Sustainability Report* featured a past first-place winner: students representing the organization Wolfpack Environmental Student Association were selected out of more than 30 proposals to create a student-maintained community garden that would partner with the Campus Farmers’ Market to provide students with access to fresh produce.

Hybrid Methods

Depending on how sustainability is approached on different campuses, it may be ideal to combine methods to achieve goals.

The Oberlin College Green EDGE Fund makes a notable designation in describing its two types of funding opportunities: efficiency loans and sustainability grants. Projects that reduce energy use, provide clear and timely payback, and create lasting physical change are eligible for an efficiency loan. This loan functions as a revolving loan, reinvesting the annual savings back into the EDGE Fund. The portion of this fund that is supported by the college’s administrative budget is intended to apply to these efficiency loans, which have been awarded to projects such as installing low-flow shower heads in a residence hall and retrofitting the lighting in a campus gym. Alternatively, sustainability grants are available without payback requirements, giving preference to those projects that focus on energy, involve the student body, and require only a one-time investment. Grant projects are funded by activity fees assessed to students each semester, established through student-voted referenda in 2007 and 2008. Those grants have supported composting supplies and tumblers, a campus garden, and a student-run carbon offset program that weatherizes and insulates low-income houses in the community.

Grand Valley State University announced a similar hybrid program in September 2010 through its Sustainable Community Reinvestment Fund, which awards both loans and grants to students, faculty, and staff. Obtaining contributions from multiple departments and auxiliaries on campus, anyone is able to support the fund through the university’s “Giving to Grand Valley” website. In practice, how the loans and grants can be used slightly differs from the Oberlin College Green EDGE Fund. At Grand Valley, loans are provided for projects that produce ongoing savings for specific unit budgets, with an expectation that department recipients will reinvest back into the fund. On the other hand, grants are available for projects that would generate savings or other advantages to the overall university community, not a specific unit or department, and the grants have no expectation of reinvesting in the fund. All projects are held to requirements for providing reports to the committee so that summaries of successes and results can be shared with constituents.

Finding the Funds

Federal legislative activity could transition the financing of clean-energy projects in higher education from “a voluntary goodwill program to a mandatory compliance regime,” according the 2010 *Business Officer Magazine* article “Financial Climate Change.” If the U.S. House of Representatives’ American Clean Energy and Security Act of 2009 were enacted, “Those colleges and universities that are emitting greenhouse gases will likely have to record new liabilities on their balance sheets. Others that are net producers of renewable energy credits may find themselves recognizing new revenues and new assets.”

Meanwhile, several federal initiatives are being explored to support and reward green initiatives in education. As described in a 2009 *EDUCAUSE Review* article, the University Sustainability Program of the reauthorized Higher Education Act includes a grant program created to support green initiatives. In 2010, this program financed four grants in higher education totaling $3.1 million through the Fund for the Improvement of Postsecondary Education. Grants are to be used to design and implement sustainability practices in areas such as “energy management, greenhouse gas emissions reductions, green building, waste management, purchasing, transportation, and toxics management, and other aspects of sustainability that integrate campus operations with multidisciplinary academic programs and are applicable to the private and government sectors,” according to the 2010 application materials.

The results of the 2011 College Sustainability Report Card confirm that campuses are advancing sustainability programs. Forty-nine percent of the participating institutions reported having endowment investments in renewable energy funds, with 16 percent investing in community development funds, and 8 percent investing in campus-based projects such as energy or water efficiency. This shows that institutions are demonstrating a willingness to commit financial resources toward sustainable causes, accepting the challenge by trying new and innovative funding methods. The models described here are just a few that colleges and universities can consider. While financial support to initiate new programs is often cited as a primary barrier to sustainability on campus, the documented cost savings and the social responsibility outcomes have proven to be worth the investment. ■

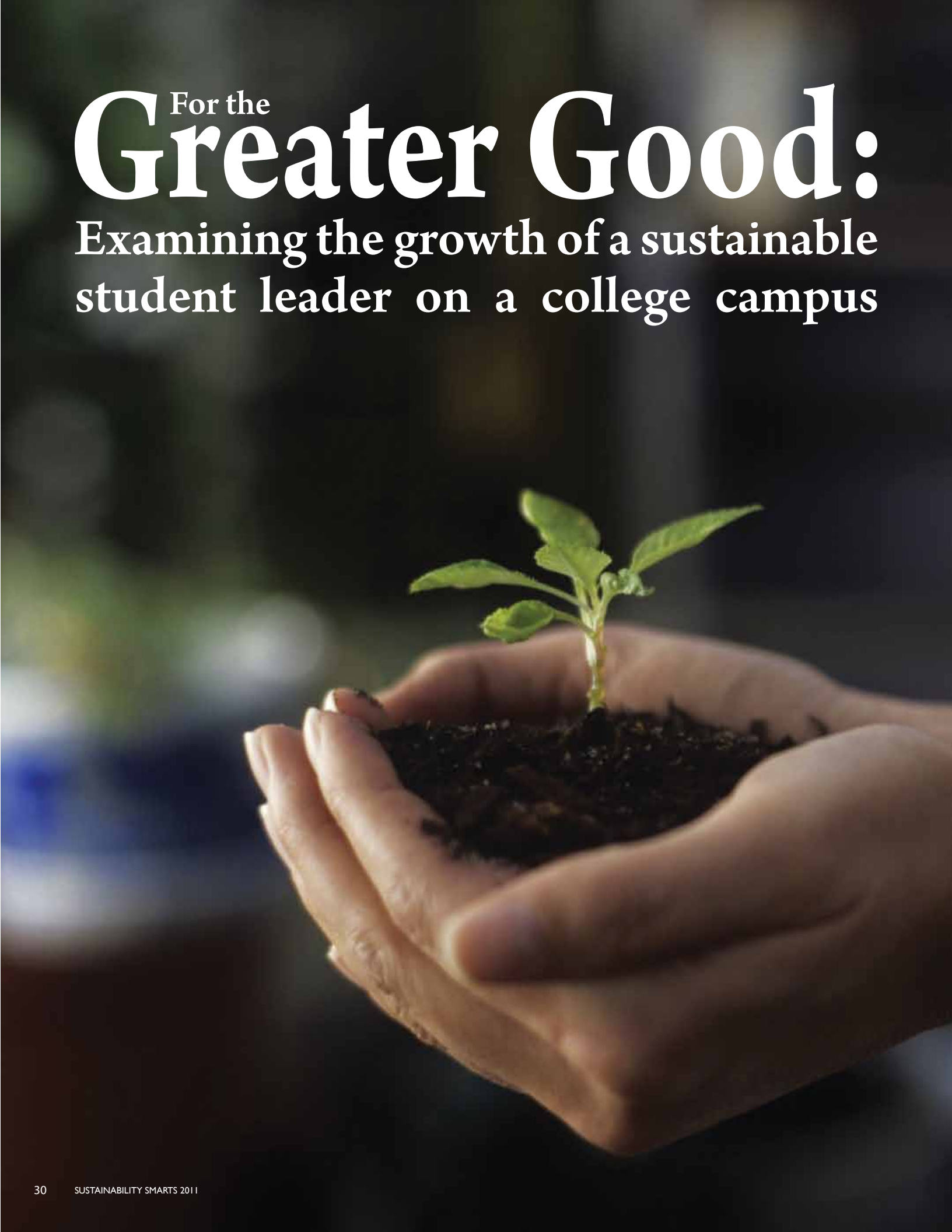
SOCIAL

"We are made wise not by the recollection of our past, but by responsibility for our future."
-George Bernard Shaw

This area focuses on how one interacts with others, whether it be donating time and money to a cause or taking a leadership role in a green student organization. The social principle's purpose is to ensure individuals are not just concerned with themselves, but involved with the betterment of the greater community.

For the Greater Good:

Examining the growth of a sustainable student leader on a college campus



BY ELIZABETH STRINGER

Sustainability is not just about the environment. It is the future. It is about helping one another. It is about being socially renewable—living your life in a sustainable manner and leading others to do the same.

But how is this achieved? How is a person to be sure that he/she is being responsible in their own lives as well as affecting change in the lives of others? This article will look at the Social Change Model for Leadership Development from the perspective of becoming a green leader on campus.

Social Change Model for Leadership Development

In "Leadership for a Better World," Susan Komives, Wendy Wagner, and associates discuss the Social Change Model for Leadership Development. "The Social Change Model for Leadership Development approaches leadership as a purposeful, collaborative, values-based process that results in positive social change," the authors said in the book.

Operating under the following key assumptions, "This model provides a framework for individuals and groups to engage in leadership for social change:

- Leadership is concerned with effecting change on behalf of others and society
- Leadership is collaborative
- Leadership is a process rather than a position
- Leadership should be values-based
- All students (not just those who hold formal leadership positions) are potential leaders
- Service is a powerful vehicle for developing students' leadership skills"

The Social Change Model for Leadership Development asserts that this development occurs on three levels: individual, group, and societal. And within each level, "critical values," referred to as the "Seven C's," are embraced.

The ultimate goal of the Social Change Model for Leadership Development is to enact social change, to improve the world for those to follow. This goes hand-in-hand with the overarching goal of sustainability, to leave the Earth—environmentally, financially, and socially—a better place for future generations.

Considering the progress of a sustainable student leader on campus from the perspective of the Social Change Model for Leadership Development is simple. The authors noted in "Leadership for a Better World" that the values presented in this model are not just a checklist to go through and complete; rather, "development is ongoing." Therefore, examining the past, present, and future involvement of a student attempting to lead a sustainable life may assist in understanding how the this model can effectively develop future, and even current, leaders on campus.

Liesel Schwarz

Liesel Schwarz is a senior at the University of Rochester majoring in sustainability planning and development, a major she created herself. She is actively involved in sustainability efforts at the university as well as in the greater community. After graduation, Schwarz hopes to work in higher education, potentially as a sustainability coordinator or director. This will allow Schwarz to combine her passion for the environment with her love of working with students in a university setting.

Through her experiences, Schwarz has come to understand, just as *Sustainability Smarts* conveys, that sustainability is not just about the environment—it is about so much more.

"Sustainability concerned me at first—on the surface—with its environmental implication, the worldwide effect humans could have on our environment; but as I got more involved, I realized that there is also a human component to sustainability," she said. "This human component has proven to be just as motivating as the environment."

When Schwarz started taking on sustainability roles on campus, she was not following the Social Change Model for Leadership Development. She was simply pursuing an interest. But when the model is applied to Schwarz's experiences, it is easy to see that developing leaders in this manner can result in social responsibility.

Applying the Social Change Model

INDIVIDUAL

Before one can effect change in others, that person must believe in himself or herself. The Social Change Model provides three values for the individual level: consciousness of self, congruence, commitment. These values allow for "inner work" and "reflection" on the individual level, according to the authors.

Consciousness of self

Being aware of the beliefs, values, attitudes, and emotions that motivate one to act

Actions begin with the individual. Knowing what actions one wishes to take comes from knowing oneself. The authors of "Leadership for a Better World" employ the idea of a looking glass; a person must know and be aware of their beliefs, values, attitudes, and emotions. An example used in the book is that if a child grows up being told that he or she plays the piano well, that child has a better chance of being musical as an adult than a child that was not offered this same encouragement.

From the perspective of sustainability, consciousness of self would be the understanding of why the environment and social equality are personally important. Reflecting on her own beliefs, Schwarz is able to ascertain that her desire to be a sustainable person begins with how she was raised.

"My family raised me to recycle and grow vegetables in the backyard; it was normal for me to consider the environment before acting," she said. "My parents were not hippies by any means, but basic respect for the environment was definitely present in my family. My grandfather especially, who owns a couple acres of forest in southern New York, has bestowed upon me a lot of his environmental compassion."

The values instilled in Schwarz as a child carried through to her adolescent years. She first became aware of her concern for the environment in high school; this only heightened once in college as Schwarz realized that not everyone held her same beliefs.

"I started to get involved in sustainability on campus because it seemed so obvious that something needed to be done," she said. "When I got to school, I realized that not everyone else had been raised on the same mentality."

Her childhood values coupled with her desire to "do something," allowed Schwarz to be conscious of herself and her desired actions at a time when she was independently able to pursue her newly found passion.

Congruence

Thinking, feeling, and behaving with consistency, genuineness, authenticity, and honesty toward others

"Leadership for a Better World" sums up congruence with one simple phrase: walk the talk. This value involves being consistent in your actions and words. "One of the greatest challenges of leadership is acting consistently, even when no one is looking," the authors stated.

In high school, Schwarz had her first interaction with sustainability outside of her family influence.

"I think my desire to help my community came when I was a junior in high school," she said. "Our church gave out $100 to 10 people to use to better the community. I decided to hold cooking classes on healthy, easy meals. The leftover money was given to UNICEF."

This provided Schwarz an opportunity to not only speak to the importance of sustainability, but also to dictate a sustainable action. Once she reached college, Schwarz became even more conscious of her desires to help the environment and be a truly sustainable person.

"This desire to help others continued after I went to college, and I started to get involved in campus groups," she said. And according to Schwarz, she practices what she preaches.

"If I can't do it, why should I expect others to do it?" she said. "I try to use reusable bags, take public transportation, recycle, lower the thermostat, turn off my lights, and more."

Schwarz does understand that some situations cannot be resolved with a sustainable solution. But she practices sustainability each day to the best of her ability and is consistent in her actions.

Commitment

Psychic energy that motivates the individual to serve and that drives that collective effort; commitment implies passion, intensity, duration

Commitment is born out of one's passion. Commitment leads individuals to take actions that often result in a collective effort, such as joining a campus sustainability group or starting a community garden.

■ Team Green members (from left to right): Schwarz; Rachel Goldstein, sophomore; Louisa Gag, junior; Matt Bauer, junior; Ziwei Xioa, sophomore

photo courtesy of Liesel Schwarz

"I think sustainability is a very important and pressing issue, and I hope my passion for the cause will help to create positive change."

"Commitment is demonstrated by significant involvement, the investment of time, and emotional passion. It is crucial in advancing the collective effort. … The majors and future careers students choose may give insight into their passions," suggest the authors in "Leadership for a Better World."

Throughout her college career, Schwarz has proven her commitment to sustainability. Not only has she been active in environmental programming on campus, but also she plans to dedicate her life to sustainability.

"I am hoping to make a career out of it, so you could say I am fully committed," Schwarz said. "I believe sustainability is a very important and pressing issue, and I hope my passion for the cause will help to create positive change."

Her personal commitment to sustainability is a driving force for Schwarz, and she does not keep her passion inside; instead, she allows her energy to flow into work done on the campus and in the community.

"How I live my life, the decisions I make every day are in some way dictated by trying to be more sustainable," she said. "I am committed to sustainability. What this means for me will change as the definition and our understanding of sustainability changes, but the core understanding for me—making the world a better place for everyone to live in—will always be my driving force."

It is the constant commitment to sustainability, whether through personal or groups efforts, that has allowed Schwarz to grow as a leader.

GROUP

Change cannot be entirely achieved on the individual level; working as part of a group is a more effective way to advance one's goals. "Leadership for social change occurs at the group level, whether within a student organization, a group of friends, a group project for a class, or a sports team," according to "Leadership for a Better World."

Collaboration

To work with others in a common effort; it constitutes the cornerstone value of the group leadership effort because it empowers self and others through trust

A group must work together, or collaborate, to achieve any measure of success. "When groups value collaboration, individual members make a choice and a commitment to act in concert with others. Without collaboration, a group will not be effective at accomplishing its shared vision," the authors explained in "Leadership for a Better World."

Schwarz is involved with a group called Team Green, which works with dining services to provide more sustainable options and practices for the campus. Schwarz serves in this group with four other students; she currently is the group's manager.

Through involvement on Team Green, Schwarz collaborates with students and staff. Molly Chamberlain is one dining staff member who works with Schwarz and Team Green. As the dining services marketing manager, Chamberlain is responsible for spreading the message about Team Green efforts.

"This helps me collaborate with others because I need to understand the ins and outs of the program and follow up on feedback that the program collects in order to consistently send a message to the student body that dining is serious about sustainability," Chamberlain said.

Team Green and members of dining services meet on a regular basis. Recently, the two groups worked together to bring the clamshell initiative to campus. A clamshell is a reusable container, and the program encourages students to reuse their dining containers as opposed to disposing of them. The clamshells are available for purchase in dining halls on campus; once a student is done with a clamshell, it may be returned for a clean one or a for keychain that shows the student participates in the program and is good for a future clamshell.

"In terms of the clamshell, we worked together to discuss the pros and cons of introducing the clamshell at the University of Rochester," Chamberlain said. "Together, we figured out the best way to implement the program."

As the Social Change Model for Leadership Development asserts, collaboration is key to a group's success. It's possible that Team Green would not have as effectively marketed the new clamshell initiative without Chamberlain's help; additionally, dining services may not have brought this program to campus without the work of Team Green.

Common purpose

To work with shared aims and values; it facilitates the group's ability to engage in collective analysis of the issues at hand and the task to be undertaken

According to "Leadership for a Better World," "Leadership success rests upon a common purpose."

Team Green is "hired to push dining to do things they would never do without student demand," Schwarz said. "To constantly question and demand. Our goal is to improve dining sustainability efforts, to do all we can sustainably in dining."

By working on this common goal, the group has implemented several successful dining initiatives.

"We are continually expanding our local purchases; we are now at 25 percent on a regular basis. We do reduced meat meals, called 'Flexitarian Nights,' as a way to educate students of the harms of eating lots of meat, as well as to show them that eating less meat still tastes good," Schwarz said. "We also helped put in place many programs, such as trayless dining, 100 percent pre-consumer recycling and composting, a reusable mug program, the clamshell program."

The members of Team Green have similar values and commitments as individuals, and they have come together with the common purpose to enact change on campus.

Controversy with civility

Recognizes two fundamental realities of any creative group effort: (1) differences in viewpoints are inevitable, (2) such difference must be aired openly with civility

"It is inevitable that in any group disagreements will arise," state the authors of "Leadership for a Better World." Controversy should not be shied away from; rather, it should be embraced "with civility" for the betterment of the group.

"If a group does not welcome controversy with civility, there are many voices that may not be heard or perspectives that may be lost because individuals do not feel comfortable introducing ideas different from the norm of the group," according to the book.

Team Green and the dining services staff understand this concept.

"We openly and without hesitation bring up comments and concerns," Chamberlain said. "I feel that it is a good relationship because all members realize that the concern and questioning is not to nit-pick but to get the best results from the project."

One difference that could lead to opposing opinions within a group is members' individual reason for involvement. Chamberlain works with Team Green to market their initiatives. Employed by ARAMARK, it is possible that she may have a different viewpoint on the sustainable practices than a student (not to say that the idea of sustainability is any less important to Chamberlain than another person in the group).

Schwarz, on the other hand, joined Team Green to "make a positive difference on the lives of students" at her university.

And differences do not just stop at the underlying purpose for involvement. When considering new programs, some members may be more concerned with a financial return.

"This, to me, is a good thing," Schwarz said. "I have learned that as much as I would like a money pit of a project to be successful, unless there is a monetary return, the project can never be successful/sustainable. It is good to have differing opinions because it keeps everyone honest, and we learn what others may be thinking, so when promoting an idea we can come at it from all sides. Although we have members of our group that have differing concerns, we are all open minded and here to make a difference on campus. It is important to have these commonalities because without them we would not be able to make the progress we have made."

Though dealing with controversy may not allow for a group to run smoothly all the time, as Schwarz and the authors of "Leadership for a Better World" believe, the differences can advance the group.

SOCIETAL

The end goal of leadership should not be personal gain; it should be "directed toward a purpose greater than self for a societal end," noted the authors in "Leadership for a Better World." At the societal level, the focus is connecting one's leadership to a larger social purpose.

Citizenship

The process whereby the individual and the collaborative group become responsibly connected to the community and the society through the leadership development and activity

A community can be defined many ways, according to "Leadership for a Better World." And being an active citizen within that community can take on many different forms. It could be serving in a student organization or volunteering at the local soup kitchen on the weekend. The important part is that an individual or group is helping the greater good, working with others to achieve a larger goal.

"There is a great privilege to being part of a community, and as a result, a great responsibility to be an active participant in that community as part of the leadership process," the authors stated.

Schwarz is not only involved with her campus community, but also the community surrounding the university. Through Team Green, Schwarz became involved with the local Westside Farmer's Market. Her work with this entity promotes the greater green causes of supporting farmers, eating local, and eating healthier.

"Two years ago, my director was looking to outreach to this farmer's market and the community in which it is located," Schwarz said. "Working with an existing university program, Urban Fellows, I was able to become an intern for the market over the summer of 2009. My job was to do whatever the market needed of me, which ended up being a bit of marketing and outreach to other community organizations, as well as to organize two University of Rochester Market Days."

Today, Schwarz does not have as much direct involvement with the market as she passed the torch along, but she is still working to promote the program.

Additionally, Schwarz participates in a local community festival called Greentopia. While minimal, Schwarz's involvement spreads the message to her community and outside communities about the importance of being sustainable.

"I act as a student representative, giving my opinion based on the experiences I have had in the university setting," she said. "Since the festival hopes to attract a number of college students, I assume this information is helpful."

Schwarz's individual values caused her to become involved with groups whose members had a common purpose; and it was through these groups that Schwarz was able to use those personal values to enact change on a societal level.

Social change

Schwarz is just one student on one campus in one country. But her actions reach further. Her involvement in Team Green, the Westside Farmer's Market, and Greentopia as well as her daily dedication to being a sustainable person have touched many lives—family members who see the values they instilled in her, friends who adopt her recycling habits, fellow Green Team members who she pushes to come up with new ideas, and even local community members who may have never previously met a college student with such a passion for being green.

And this was all born out of Schwarz's developing concern for the environment at an early age.

The Social Change Model for Leadership Development provides a framework whereby students may begin building the philosophy of what it truly means to be a leader on campus and enact change—whether sustainable or otherwise. ■

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