Creating more livable cities

PERSPECTIVES ON SUSTAINABILITY, FOOD ACCESS, HEALTH, ENERGY AND CLIMATE READINESS
Before the end of the century, more than 75 percent of us worldwide will live in cities, compared to just over half of us now. This revolution means cities simply can’t be ignored.

For many people, nothing may seem less natural than a city. Cities are full of people; they’re noisy, dirty, and everywhere marked by artificial activities and materials. People who think about nature often deliberately choose not to think about cities. And yet...

And yet cities are constructed from nature: sand, water, metal and stone. They typically term with life, from insects and raccoons to coyotes and eagles. Most importantly, the creation of cities always depends on the transformation of surrounding rural areas, from which flow raw materials, food and energy. As writer Matthew Cundy famously noted in his book Concrete and Clay, “the design, use, and meaning of urban space involve the transformation of nature into a new synthesis.” In this sense, what could be more natural than a city?

More than this, cities can even be the key to sustainability. Urban living is far more energy-efficient than life in sprawling suburbs or rural dwellings. The concentration of people allows remarkable innovations in infrastructure and transport. Smart urban design lowers the human footprint on the Earth, to say nothing of the cultural inflorescence and creativity made possible by cosmopolitan life.

Finally, thinking about cities as environments is made all the more imperative by a simple reality: Before the end of the century, more than 75 percent of us worldwide will live in cities, compared to just over half of us now. This revolution means cities simply can’t be ignored.

Visiting Shanghai on behalf of the Institute in March of this year, however, I couldn’t help but be concerned about what cities do to the environment and to the people who live there. Faced with snarled traffic, filthy air, and miles and miles of construction made me wonder if people couldn’t do a better job of crafting their urban environments.

Fortunately, folks associated with the Nelson Institute have been thinking about the “nature of cities” for a long time, and we’re pleased to profile just a few of them in this issue of In Common. Our Director, Nelson Institute

In Common is published by the Nelson Institute for Environmental Studies at the University of Wisconsin-Madison. Funding for production and distribution is provided through the generosity of our alumni and friends. Contact us at incommon@nelson.wisc.edu.

Steve Pogegen
Executive editor
Meghan Leguee
Managing editor
Danielle Lamerssen Philipp
Designer
Donald Radcliffe
Writer

features

8 Livable cities
Nelson alumni offer thoughts on urban futures

SUSTAINABILITY

10 A global view of urban growth
An interview with professor Harvey Jacobs

FOOD ACCESS

12 Growing food in forgotten spaces
Amanda Fuller sees unearthed potential in vacant city lots

HEALTH

14 Hungry for more
University/community partnership makes healthy food for all

REALITY

16 Movement as medicine
Innovative research shows how critical activity is to health

18 Clearing the air
Air quality research better public health and policy

ENERGY

20 A livable city solution: The powerful potential of microgrids

CLIMATE READINESS

22 Social networks boost heat wave resilience

23 Preparing for change

25 A livable urban world

In Common alumni offer thoughts on urban futures

Preparing for change

Message from the director

Around the Nelson Institute

Investing in Nelson
Gifts provide crucial source of student, program support

First person
Student firms meeting has an energizing experience in Uganda

Alumni notes
Catching up with graduates; alumni awards recipients

CONTENTS
Save the date for Neil deGrasse Tyson
Renowned astrophysicist and author Neil deGrasse Tyson will keynote the ninth annual Nelson Institute Earth Day Conference in Madison on April 20, 2015. Tyson is director of the Hayden Planetarium at the American Museum of Natural History in New York and host of the television series Cosmos: A Spacetime Odyssey. He is an accomplished communicator of science to general audiences and an outspoken advocate for science education and research.

The conference will explore the intersection of science, society and the environment, with registration opening in the fall. For more information and updates: nelson.wisc.edu/earthday

Tales from Planet Earth travels to Stockholm
In its first trip overseas, the Tales from Planet Earth film festival premiered in Stockholm in April with a series of films, lectures, workshops and panel discussions.

The events were part of a longer-term collaboration between the Nelson Institute Center for Culture, History, and Environment, the KTH Environmental Humanities Laboratory at the Royal Institute of Technology in Sweden, and the Rachel Carson Center for Environment and Society in Munich.

The festival will be followed by a three-day international workshop, “The Anthropocene: Cabinet of Curiosities Slam,” at KTH Royal Institute of Technology in Sweden, and the Rachel Carson Center for Environment and Society in Munich.

Adventures abroad
While studying abroad at the National University of Ireland, Galway, English and environmental studies major Dustin Sweeney shared eco-minded observations in a blog for the Nelson Institute. From a stop at the last port of call for the ship Titanic to a wondrous hike through the pristine Swiss Alps, you can follow her experience at go.wisc.edu/lassinclass.

Meanwhile, economics and environmental studies major Paul Davidson shared stunning snapshots from his study abroad in Rio de Janeiro, Brazil. To see a collection of his photos: go.wisc.edu/paulstudyabroad

Research by Nelson affiliates shapes national climate report

Nearly 800 participants from across the upper Midwest gathered at the eighth annual Nelson Institute Earth Day Conference in April to explore ideas and issues related to the Anthropocene — the age of humans — a term many scientists are using to describe the profound impact people are having on the global environment. To view photos and videos from the event: go.wisc.edu/earthdayrecap

Workshops yield conservation solutions in China

New, collaborative strategies for maintaining China’s rich biodiversity emerged from a workshop in March hosted in Sichuan by the Chinese Academy of Sciences’ Chengdu Institute of Biology and the Nelson Institute. The workshop was made to build on local collaboration between the institutes and to explore opportunities to help train conservation managers through innovative curriculum designs. Cooperative efforts between the institutes extend back to the 1950s.

Liberia, Madison and ‘A Film Never Made’

A serendipitous meeting between Nelson Institute graduate student Emmanuel Urey and faculty affiliate Gregg Mitman has led the pair on a stunning journey to reconnect Liberia’s present with the past and share the story in a forthcoming documentary.

Urey, a child of Liberia’s civil war, journeyed from Monrovia and remote rural villages. Follow the adventure in the big picture.

“December was the third warmest, globally, on record. January was the fourth warmest, globally, on record. The fact that we here in Wisconsin have been shivering for three months shows what an outlier we’ve been in the big picture.”

· Giving scientists a view, putting into perspective the events globally and locally. SNEEZE ALARMHORN

If you choose a career path and find it isn’t speaking to who you are, I think you should do whatever you need to do in terms of changing direction. I really awarded a $90,000 EPA grant to expand and prototype the program.

Farms’ markets are widely praised as a way to bring fresh, locally grown food into urban communities. But what if you start one and nobody comes? That’s one of several questions Nelson Institute students tackled in the fall seminar in Madison to help guide sustainable community food systems. To learn more about their service-learning projects: go.wisc.edu/EScapstone

3 MILLION INSECT SAMPLES, FROM PARASITES THE SIZE OF A PINHEAD TO GIANT GREEN GOLDFIsh BEETLES PROPORTIONED LIKE FAT MICE, RESIDE IN THE WORLD-CLASS WISCONSIN INSECT COLLECTION DIRECTED BY NELSON INSTITUTE AFFILIATE DAN YOUNG. Go.wisc.edu/insectcollection

Around the Nelson Institute

SNAPSHOTS

299 students earned degrees and certificates from the Nelson Institute in May, joining the 6,400-strong UW-Madison Class of 2014.

40 BILLION TONS of carbon dioxide were emitted globally in 2013 from the burning of fossil fuels, driving the atmospheric concentration to levels not seen in human history and raising the stakes for adaptation: go.wisc.edu/carbon

#2 is the ranking Wisconsin received in a recent national survey of the number of residents considered birders, bested only by Vermont. With the help of “Birding to Change the World,” the Nelson Institute’s mentoring and outdoor education partnership with Madison’s Sherman Middle School, Wisconsin could some day jump to the top spot—the program’s become one of Sherman’s most popular after-school activities.

NEW MIGHTY MEALWORMS like Fat Mice, reside in the world-class Wisconsin insect collection directed by Nelson Institute affiliate Dan Young. Go.wisc.edu/insectcollection

40 BILLION TONS of carbon dioxide were emitted globally in 2013 from the burning of fossil fuels, driving the atmospheric concentration to levels not seen in human history and raising the stakes for adaptation: go.wisc.edu/carbon

$30,000 was awarded to Nelson graduate student Steven Shiff for his outreach and teammate Rachel Borgan in April in two student innovation competitions at UW-Madison. Their Mighty Mealworm startup will produce an edible mushroom protein powder to improve food security in parts of sub-Saharan Africa most affected by drought and climate change.

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

IN WATER RESOURCES MANAGEMENT IN MAY.

STEVE VAVRUS, SENIOR SCIENTIST, PUTTING INTO PERSPECTIVE THE STATE’S BRUTALLY COLD WINTER: ‘THE BIG PICTURE.’

GO.WISC.EDU/WATERRESOURCES

DAN YOUNG, A CHILD OF LIBERIA’S CIVIL WAR, JOURNEYED FROM MONROVIA AND REMOTE RURAL VILLAGES. FOLLOW THE ADVENTURE IN THE BIG PICTURE.

GO.WISC.EDU/INFO

58.2 PERCENT OF STYROFOAM HAVE BEEN DIVERTED FROM THE WASTE STREAMS thanks to the student-led campus initiative Styrofood. The pilot Styrofood recycling and reuse work坊 was recently awarded a $10,000 EPA grant to expand and prototype the program.

GO.WISC.EDU/CARBON

5 MILLION SEMI LOADS of Styrofoam have been diverted from the waste streams thanks to the student-led campus initiative Styrocycle. The pilot Styrofood recycling and reuse work坊 was recently awarded a $10,000 EPA grant to expand and prototype the program.

GO.WISC.EDU/CARBON

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

GO.WISC.EDU/STYROFOAM

NEARBY 800 PARTICIPANTS FROM ACROSS THE MIDWEST GATHERED AT THE EIGHTH ANNUAL NELSON INSTITUTE EARTH DAY CONFERENCE IN APRIL TO EXPLORE IDEAS AND ISSUES RELATED TO THE ANTHROPOCENE — THE AGE OF HUMANS — A TERM MANY SCIENTISTS ARE USING TO DESCRIBE THE PROFOUND IMPACT PEOPLE ARE HAVING ON THE GLOBAL ENVIRONMENT. TO VIEW PHOTOS AND VIDEOS FROM THE EVENT: GO.WIS.C.EDU/ARTHROY

NELSON WISCONSIN NEILD Urey and faculty affiliate Gregg Mitman have led the pair on a stunning journey to reconnect Liberia’s present with the past and share the story in a forthcoming documentary.

A child of Liberia’s civil war, journeyed from Monrovia and remote rural villages. Follow the adventure in the big picture.

GO.WISC.EDU/INFO

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

GO.WISC.EDU/STYROFOAM

NEARBY 800 PARTICIPANTS FROM ACROSS THE MIDWEST GATHERED AT THE EIGHTH ANNUAL NELSON INSTITUTE EARTH DAY CONFERENCE IN APRIL TO EXPLORE IDEAS AND ISSUES RELATED TO THE ANTHROPOCENE — THE AGE OF HUMANS — A TERM MANY SCIENTISTS ARE USING TO DESCRIBE THE PROFOUND IMPACT PEOPLE ARE HAVING ON THE GLOBAL ENVIRONMENT. TO VIEW PHOTOS AND VIDEOS FROM THE EVENT: GO.WIS.C.EDU/ARTHROY

NELSON WISCONSIN NEILD Urey and faculty affiliate Gregg Mitman have led the pair on a stunning journey to reconnect Liberia’s present with the past and share the story in a forthcoming documentary.

A child of Liberia’s civil war, journeyed from Monrovia and remote rural villages. Follow the adventure in the big picture.

GO.WISC.EDU/INFO

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

GO.WISC.EDU/STYROFOAM

NEARBY 800 PARTICIPANTS FROM ACROSS THE MIDWEST GATHERED AT THE EIGHTH ANNUAL NELSON INSTITUTE EARTH DAY CONFERENCE IN APRIL TO EXPLORE IDEAS AND ISSUES RELATED TO THE ANTHROPOCENE — THE AGE OF HUMANS — A TERM MANY SCIENTISTS ARE USING TO DESCRIBE THE PROFOUND IMPACT PEOPLE ARE HAVING ON THE GLOBAL ENVIRONMENT. TO VIEW PHOTOS AND VIDEOS FROM THE EVENT: GO.WIS.C.EDU/ARTHROY

NELSON WISCONSIN NEILD Urey and faculty affiliate Gregg Mitman have led the pair on a stunning journey to reconnect Liberia’s present with the past and share the story in a forthcoming documentary.

A child of Liberia’s civil war, journeyed from Monrovia and remote rural villages. Follow the adventure in the big picture.

GO.WISC.EDU/INFO

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.

IF YOU CHOOSE A CAREER PATH AND FIND IT ISN’T SPEAKING TO WHO YOU ARE, I THINK YOU SHOULD DO WHATEVER YOU NEED TO DO IN TERMS OF CHANGING DIRECTION. I REALLY AWARDED A $90,000 EPA GRANT TO EXPAND AND PROTOTYPE THE PROGRAM.
Research partnerships, projections explore environmental ‘what-ifs’

Dozens of grant-supported projects are underway in the Nelson Institute at any time. Below are a few examples of the broad spectrum of research generated by our centers, faculty, staff and students.

Professor Jonathan Patz chaired a 20-nation joint meeting in Addis Ababa, Ethiopia, in November meant to build interdisciplinary bridges to address climate change in Africa, and will continue to help build environmental health collaborations there.

Ahead of the meeting, he collaborated with the Nelson Institute Center for Climate Research (CCR) to review the latest Intergovernmental Panel on Climate Change report with a focus on the already vulnerable continent.

Research by CCR associate director Michael Notaro, utilizing high-resolution climate projection data from fellow CCR climate scientist David Lorenz, is helping to better illustrate what winters in the Midwest could look like later this century.

The ski model projects a reduction in annual snowfall in the 21st century by 24 percent (about 21 inches) for a low-carbon-emission scenario and 40 percent (about 35 inches) for a high-carbon-emission scenario. Yet total winter precipitation is expected to increase, with more rain as winters get warmer. And very heavy snowstorms in the region might also become more frequent.

Notaro also studied how lake-effect snow in the Great Lakes Region will change. His findings suggest the region will see a decrease in lake-effect snowstorms by the end of the century. An increase in temperatures might signal a switch to lake-effect freezing rain, creating unfavorable winter conditions and wetter, heavier snowpack.

The industrial revolution is often cited as the trigger of human-caused climate change. However, preindustrial people may have influenced the global temperature about as much as their fossil-fuel burning successors, according to a study published in Geophysical Research Letters by CCR scientists Feng He, Steve Vavrus and John Kutzbach, in collaboration with researchers at the Universities of Virginia and Geneva.

The team employed a new climate model to simulate historical land cover changes up to the year 1850. Before the first surge of petroleum was ever burnt, deforestation and agriculture had raised the global temperature about 1.5 degrees Fahrenheit above expected levels, their research shows.

In a paper published in May in Science, Nelson Institute associate professor Adrian Teves and Ohio State University’s Jeremy Bruskottter provide insights to aid future wildlife recovery and restoration efforts. The analysis includes research by graduate student Jamie Hogberg (M.S. OESS ’14) and others affiliated with the institute.

The authors challenge the conventional view that intolerance and intention to kill wildlife predators results primarily from perceived threats to livelihoods, and they recommend caution in legalizing the killing of predators. Rather, they suggest that experimentally manipulating monetary and social incentives would help conservationists determine which factors influence poaching and intolerant behavior toward predators, both individually and across cultures.

New knowledge of larger head seas turtles’ first years of life, published in March in Proceedings of the Royal Society B, may provide better protection for threatened and endangered sea turtle species. So little is known about what happens between the ocean escape of infant turtles and the return, years later, of larger juveniles, the period is often called “the lost years.”

Zoologist Warren Porter was part of a team that used satellite transmitters to track the movements of 17 neonate turtles across the Atlantic Ocean. The research showed that turtles choose a habitat of floating mats of sargassum, a species of seaweed. The tangles of sargassum are magnets for other small sea creatures, too, providing food for the turtles, and they also offer concealment and a blanket of warmth to supercharge the turtles’ growth.

In a study published in May in Science, Nelson Institute associate professor Chris Schlett provided much of the guiding vision for the UW-Madison-led Open Source Seed Initiative (OSSI) that in April released a novel seed ownership agreement. The group’s new Open Source Seed Pledge is designed to keep seeds free for all people to grow, breed and share for perpetuity, with the goal of protecting plants from patents and other restrictions down the line.

OSSI was established in 2011 around concern over the increasing availability of plant seeds for public plant breeders and farmers. In a study published in November in PLOS ONE, a team of researchers used modeling tools to explore how switching land from growing annual commodity crops to growing perennial grasses for bioenergy would impact farmer income, energy production and environmental benefits.

Plowing perennial crops such as switchgrass near creeks increased greenhouse gas mitigation, water quality, beneficial insects and energy production though it decreased total net income of farms in the study area by $60 million.

As follow-up, the team is developing a web-based tool anyone can use to predict how land use decisions will impact outcomes including biodiversity, production, farmer income and environmental services.

A new study from UW-Madison researchers, including Steve Carpenter, sheds light on what climate change – specifically, changing precipitation patterns and more severe droughts – could mean for life in lakes. The team monitored a Wisconsin lake from 2001 to 2009 — a time when a prolonged drought greatly reduced lake levels throughout the region.

In a study published in April in the American Journal of Public Health, the researchers recommend that protecting drinking water with treatment, and with delivery infrastructure in areas with untreated water, may be important measures for children’s health.

The researchers found that under normal water-level situations, trees that have topped into a lake’s near shore waters offer a refuge for fishes that would otherwise be lunch, and provide food for those fishes — serving as structure for algae and aquatic insects.

When water levels drop, however, species are forced to move into what’s called the foraging arena, where they’re directly interacting with predators.

As a graduate student, Chris Ugo (Ph.D. ’11 ER), now a faculty member at the University of Florida, led a study showing that island rainfall increased during summer and fall, there was a notable increase in gastrointestinal illness amongst children in places with untreated water. Municipalities with treated water and private wells did not see the same increase in illnesses.

In the results, published in April in the American Journal of Public Health, the researchers recommend that protecting drinking water with treatment, and with delivery infrastructure in areas with untreated water, may be important measures for children’s health.

P ossible futures for Wisconsin’s Yahara Watershed were unveiled in May as part of the university’s Water Sustainability and Climate Change initiative, a five-year, multimillion-dollar initiative funded by the National Science Foundation.

The initiative, called Yahara 2070, is a set of four scenarios — fictional yet plausible stories grounded in rigorous scientific methodology — about the watershed in the year 2070, each based on varying social and environmental trends. Numerous Nelson Institute affiliates and scientists are involved, including Chris Koharik as lead principal investigator.
What will the cities of the future be like? That question has been explored for centuries. It drives the plot in countless works of fiction and film, with visions ranging from Ernst Callenbach’s optimistic Ecotopia to the dark and dysfunctional Los Angeles of Ridley Scott’s Blade Runner.

Entertainment aside, the matter of our metropolitan future has grown in urgency as the world rapidly urbanizes. Researchers, planners, investors and advocates face a difficult question: How can we design and build interconnected physical and social systems that enable cities to provide clean air and water, nutrition and health, quality housing, access to nature, civic engagement, and personal and economic security for all citizens?

As part of this special issue of In Common, we asked several Nelson Institute alumni to look 30 years down the road and imagine more livable, sustainable urban communities.

Sustainable cities in thirty years will have several notable features. First, metros will be more polycentric, meaning that older, inner-ring suburbs will develop walkable urban centers and increased population densities to support them.

Second, sustainable cities will look quite different at a bird’s-eye view from current ones, as communities cope with changing climates by painting rooftops white (or growing them) and mimicking healthy ecosystems to revolutionize the waste stream, stormwater runoff, and the urban food system.

The livable city is comprised of vibrant, safe, diverse, healthy neighborhoods close to employment centers and services. Neighbors have a variety of opportunities to be supportive and supportive of each other. There are ample green spaces where citizens can interact through physical activity and community gatherings.

The center of the livable city is the downtown, which offers a variety of business, retail, residential, and arts, culture and entertainment opportunities. The downtown is the living room of the community, a place where the diversity of the community is displayed. Citizens believe in the city, believe they are important factors in its success and believe the city has something to offer them.

In my imagined environmentally just city of the future, all people — regardless of race, gender, income or circumstances — live in an environment free of toxic pollution and have enough food and a home. Land, air, water and wildlife are healing from two centuries of abuse.

To get there, our current destructive culture has ceased. Instead, permaculture principles guide all decisions. All food, energy and resources are from this bioregion. Diverse government leaders prioritize human and environmental health over economic growth — honestly and transparently engaging citizens. And educational institutions, embracing multicultural perspectives, nurture diverse, healthy local communities and ecosystems.

Politically stable societies have at least one thing in common: adequate ACCESS TO FOOD. To maintain this access in the face of climate change and increased transportation costs, cities will have to source most food from within or near their boundaries. Farmers will have to focus on growing soil (composting) and growing a diversity of crops, particularly those that are drought resistant.

As more people that jobs as farmers and food service workers, it will be essential for those sectors to organize for better conditions. The most important ingredient for a sustainable city is a citizenry that stands together and is ready to organizes when things go wrong.

The livable city is comprised of vibrant, safe, diverse, healthy neighbor- hoods close to employment centers and services. Neighbors have a variety of opportunities to be supportive and supportive of each other. There are ample green spaces where citizens can interact through physical activity and community gatherings.

The center of the livable city is the downtown, which offers a variety of business, retail, residential, and arts, culture and entertainment opportunities. The downtown is the living room of the community, a place where the diversity of the community is displayed. Citizens believe in the city, believe they are important factors in its success and believe the city has something to offer them.

In my imagined environmentally just city of the future, all people — regardless of race, gender, income or circumstances — live in an environment free of toxic pollution and have enough food and a home. Land, air, water and wildlife are healing from two centuries of abuse.

To get there, our current destructive culture has ceased. Instead, permaculture principles guide all decisions. All food, energy and resources are from this bioregion. Diverse government leaders prioritize human and environmental health over economic growth — honestly and transparently engaging citizens. And educational institutions, embracing multicultural perspectives, nurture diverse, healthy local communities and ecosystems.

Politically stable societies have at least one thing in common: adequate ACCESS TO FOOD. To maintain this access in the face of climate change and increased transportation costs, cities will have to source most food from within or near their boundaries. Farmers will have to focus on growing soil (composting) and growing a diversity of crops, particularly those that are drought resistant.

As more people find jobs as farmers and food service workers, it will be essential for those sectors to organize for better conditions. The most important ingredient for a sustainable city is a citizenry that stands together and is ready to organize when things go wrong.
Ricardo Vaca-Pintat

In Common

than a million people a week bases that estimate that more
When I’m teaching, I show settlements.
portion of that population is living in slums or informal
Zealand, Japan. But we really Western Europe, Australia, New
it means to be predominantly
MILLIONS?
A global view of urban growth
 Interview by Meghan Lepisto

WHAT DO YOU SEE AS KEYS TO A LIVABLE CITY? AND HOW MIGHT THAT CHANGE AS YOU GO FROM A CITY LIKE MADISON TO A MEGACITY OF MILLIONS?

We’ve been urban in the industrial parts of the world for roughly a century, so we know how to think about what it means to be predominantly urban in the United States and Australia, Western Europe, Australia, New Zealand, Japan. But we really don’t know what it means when more than 50% of that urban population is in global megacities. On top of that, a very significant portion of that population is living in slums or informal settlements. When I’m teaching, I show my students videos and data bases that estimate that more than a million people a week are migrating to cities in the world. That’s four times the size of Madison in a single week; it’s hard for most of us to wrap our heads around that notion. The challenge to me is not how do you make a city like Madison sustainable, because in many ways it’s easy when you’ve got a city of 250,000 and a very educated and involved citizenry. What’s hard is what you do when the world is domi- nated by the Mexico Cities, the Johannesburs, the Nairobis, the Mumbais or the Beijings. Urban sustainability is really about figuring out how to engage resources, people and infrastructure in these megari- nates. What do you do when you have high rates of poverty and people struggling day to day to be alive, who therefore have less motivation to think about or care about sustainability in terms of a multigenerational frame?

ARE YOU EXPLORING THESE CHALLENGES?

I’m exploring one aspect of it: the security of people in slums and informal settlements. The familiar images are the bulldozers that come in and destroy shacks overnight, leaving tens of thousands, if not hundreds of thousands, of people homeless. There’s a very rich global discussion from the United Nations, the World Bank and a global network of scholars ask- ing the question of, what do you do? Do you give these people ownership of land in some fashion? And in giving them ownership of land, will their lives be improved? If their lives are improved, will the sustain- ability of the city be improved? Or, is giving them ownership of land in some way not really an answer?

There are multiple case studies around the world that seem to come out with different answers and there are strong advocates on both sides. My part of it is, what do you do with the millions of people living in places like Nairobi, Johannesburg and Mumbai who have tremendous insecurity in the day to day? People go to work in the morning and don’t know when they come home at night if the place they call home will be there. Even in the poor part of the poorest neighborhoods of a city in the United States, few people have to live in the conditions these people live in. I show my students a movie about informal settlements in India, which makes the point that in one of these settlements in Mumbai, there’s one working toilet for every 800 people. Afterwards, you see the shock on the students’ faces; they can’t get their minds around this.

In thinking about the many places you’ve traveled, is there one area that sticks out as getting it particularly right with regard to fostering sustainable cities?

People from all over the world go to the Netherlands to look at how the Dutch do what they do. Issues of water, transportation and energy use are three of the elements the Dutch have long paid attention to. However, is the Dutch model a good one for Mumbai or Nairobi? The Netherlands is a developed country with a multicentury history of social cooperation in the management of land and natural resources; they’re a very small nation, much of which is technically below sea level, and they devel- oped a set of ways of thinking about and acting on what we today would call sustainability: These elements are deeply ingrained in Dutch culture. One of the themes a lot of us are grappling with globally is this question of how do you create a consciousness, a culture and a set of infrastructure which will lead people both to be happy with their own lives, but to also gather to create environ- ments which work for everyone, including their children and their grandchildren. For me, the bottom line issue of environ- mental studies, no matter where you are in the spectrum, is that we all think about several generations into the future. The challenge is how we begin to move people in that direction. I’ll go back to the poverty issue. It’s very difficult when people are struggling on a day- to-day basis. It’s not impossible; we have wonderful examples that pop up of people living in circumstances of great pov- erty who yet somehow begin to act and motivate others to understand that sustainability isn’t just about someone else, that it can be about me, and it can help me. But unfortu- nately, those can be quite the exception.

How does climate change factor into or complicate these issues, for example in a coastal location like Bangladesh where people are having to migrate due to extreme weather and rising water?

It factors into it very directly and it complicates it tremendously. I regularly interact with ministry officials from a variety of countries, including many of the Pacific Islands, who say that in 20 years their country won’t exist. There are multiple questions that flow from that. Where do they go? Whose responsibility is it that they have to go, and who bears the burden of the transi- tion? Some of the people in the Bangladesh part of the world are beginning to say: “This is not our fault this happened, why do we have to bear this burden?” Right away we bump up against culture and religion and old social prejudices. This is where we need a global conversation, but we don’t have global insti- tutions that have the authority to make decisions about this. They can air the issues and get us talking with each other, but when you have a nation like the United States who says we won’t sign the Kyoto Protocol, and in fact you have a media conversation in the United States that says climate change isn’t real, it further complicates this. For me it’s fascinating to be in other parts of the world and have people look at me and say “Are there really people in the U.S. who think climate change isn’t real?” They just can’t believe that the scientific evidence isn’t compelling and that there may be hundreds of thousands of people who from their point of view are like ostriches sticking their heads in the sand. That’s just going to further complicate the problem because it delays until later and later the ability to act. And at some point it really will be too late.

If you look back in history, these kinds of very significant climate changes have led to major national and inter- national conflict and we see everything moving in that direc- tion, whether it’s about poverty, assigning of blame, or about refugees who will go – there are big issues starting at us.

As you look to the global urban future, is there one idea or solution that you think could be implemented almost anywhere to help make a modern city more livable or sustainable?

There is actually a lot of global discussion about urban food systems and the fact that, regardless of the size, density or tenure situation of the city, there are often places where food could be grown. And there’s often high motivation for people who want to grow food. A second important part of it, but a much more difficult one, is transportation. Transportation is a very big contributor to non-sustainability. The issue in China with the growth in the number of cars, smog, and the consumption of oil and gas... there’s an obvious solution and it’s about mass transit. It doesn’t have to be investment in trains, which can be wonderful if done right, but it can be invest- ment in bus systems and other forms of public transit.

If you’re going to have cities, people are going to have to get around them. Nobody likes sitting in a traffic jam. And who suffers the most when transportation doesn’t work? The poorest of the poor. They tend to live the farthest from work and spend the most time in transportation, in uncomfortable and unsafe situations. Then an issue which comes right back to urban planning, which has been a much harder one to implement, is the question of where job oppor- tunities are and where people live, and trying to think about the growth, development and management of the city so those two things – where people live and where they work – are not so separate.

In Madison, what do you like to do? We like to get on our bicycles or the bus and it’s very easy to get around and doesn’t take a lot of effort to do. People everywhere would like that opportunity.

Harvey Jacobs

Urbanization is one of the most profound trends reshaping the human presence on the planet. More than half of the global population now lives in cities, a figure expected to grow to at least 75 percent by the end of this century. In the developing world – and especially its megacities – this migration and growth poses enormous interconnected social and environmental challenges, according to Harvey Jacobs, a professor of urban and regional planning and environ- mental studies. Jacobs is a widely recognized expert on property rights, land use and social con- flict, and he is studying how these issues intersect and escalate. He has worked and lectured on these topics in locations ranging from Albania to Italy to Zimbabwe, and recently shared his thoughts on global urban sustainability.

IMPLICATIONS FOR FOOD SECURITY

In the developing world – and especially its megacities – this migration and growth is expected to grow to at least 75 percent by the end of this century. Urbanization is one of the most profound trends reshaping the human presence on the planet. More than half of the global population now lives in cities, a figure expected to grow to at least 75 percent by the end of this century. In the developing world – and especially its megacities – this migration and growth poses enormous interconnected social and environmental challenges, according to Harvey Jacobs, a professor of urban and regional planning and environmental studies. Jacobs is a widely recognized expert on property rights, land use and social conflict, and he is studying how these issues intersect and escalate. He has worked and lectured on these topics in locations ranging from Albania to Italy to Zimbabwe, and recently shared his thoughts on global urban sustainability.

In the developing world – and especially its megacities – this migration and growth poses enormous interconnected social and environmental challenges, according to Harvey Jacobs, a professor of urban and regional planning and environmental studies. Jacobs is a widely recognized expert on property rights, land use and social conflict, and he is studying how these issues intersect and escalate. He has worked and lectured on these topics in locations ranging from Albania to Italy to Zimbabwe, and recently shared his thoughts on global urban sustainability.
Inspired to try your hand at urban agriculture?
well as links to other urban farming efforts.
MEGHAN LEPISTO
In Common Spring/Summer 2014
In Common
12

13

of this inventory and aware of the possibility of alternative kinds of redevelopment. At the time, really nobody that I talked to even knew it was available. Another goal was to beautify and improve some small parcel in the only way that we know how, which is to grow things, make good soil, and share a little bit of that with the neighbors – to make one small, visible impact in a neighborhood that needs a little TLC.

WHAT HAS THE RESPONSE BEEN LIKE SO FAR?

FULTER: One of the first things I noticed when I moved to Louisville was how much vacant land there is in the city. It’s like a lot of other cities in this region, there are questions of underutilized urban property. There have been city committees and task forces to bring more attention to solutions to the issue, and I was keenly aware of that. Then when my employer, Breaking Grounds, shut its doors, Peter (Thiong) and I wanted to continue working together. We had spent the last three years looking across the street at parcels of land that were exactly emblematic of the kinds of problems we were aware of in the city with vacant and abandoned properties. That put in our heads the idea that people really should be putting those parcels to productive use.

The city had put vague calls out across the city and there’s a local museum door open and made more people aware of this inventory and aware of the possibility of alternative kinds of redevelopment. At the time, really nobody that I talked to even knew it was available. Another goal was to beautify and improve some small parcel in the only way that we know how, which is to grow things, make good soil, and share a little bit of that with the neighbors – to make one small, visible impact in a neighborhood that needs a little TLC.

WHAT HAS THE RESPONSE BEEN LIKE SO FAR?

FULTER: One of the first things I noticed when I moved to Louisville was how much vacant land there is in the city. It’s like a lot of other cities in this region, there are questions of underutilized urban property. There have been city committees and task forces to bring more attention to solutions to the issue, and I was keenly aware of that. Then when my employer, Breaking Grounds, shut its doors, Peter (Thiong) and I wanted to continue working together. We had spent the last three years looking across the street at parcels of land that were exactly emblematic of the kinds of problems we were aware of in the city with vacant and abandoned properties. That put in our heads the idea that people really should be putting those parcels to productive use.

The city had put vague calls out across the city and there’s a local museum door open and made more people aware of this inventory and aware of the possibility of alternative kinds of redevelopment. At the time, really nobody that I talked to even knew it was available. Another goal was to beautify and improve some small parcel in the only way that we know how, which is to grow things, make good soil, and share a little bit of that with the neighbors – to make one small, visible impact in a neighborhood that needs a little TLC.

DO YOU SEE YOURSELF EXPANDING BEYOND THIS AREA?

Well, we’re still sufficiently busy with this third of an acre. There’s all sorts of space, so our heads are full of things that we could grow.

I have my own vegetable gardens and jobs (Fulters serves as executive director of the Kentucky Academy of Science), and Peter has a job, so we aren’t necessarily planning to buy more property. But we’re hoping that other people take the cue and think about doing something similar.

The city has now seen us go through this process and we’ve had great support from city government, so our hope is that other people will now be looking at vacant lots and thinking about what they can do.

WHAT ADVICE WOULD YOU SHARE WITH OTHERS WHO MIGHT LIKE TO DO SOMETHING SIMILAR?

A lot of cities have a land bank of some kind. Different cities have different jurisdictions that handle properties, but there may be similar kinds of inventories. Buying a property outright is one way to do it, but last year as a preliminary effort we approached neighbors who owned side lots and vacant lots, asking, “What are you doing with that vacant lot? Do you think I could grow some food on it?”

I got a variety of responses, but eventually found a neighbor who let me plant a garden on his lot next to his business and I shared some of the produce back with him. You know, a lot of property owners would rather not mow their side lots and they would be happy to let somebody else do something on it if it meant it was reduced maintenance for them.

There are many different models. I think we just need to be creative and think about where there are spaces that could be adopted and put to better use. And think about your allies – who in your community would have an interest in doing these things?

There are lots of ways to make an impact, from guerrilla gardening to being an owner of a property to things in between.

ARE THERE OTHER BENEFITS TO THE COMMUNITY? THE PRODUCTION OF FRESH FOOD?

Since we started this, our city has undertaken a broad sustainability initiative that includes things like storm water infiltration, planting more trees for air quality, and climate mitigation. It’s helped me frame the way I’m thinking about my stewardship of this property, too.

For me it’s not just taking a vacant lot, growing some food and feeding some people, but it’s really about thinking about all the different ecosystem functions. I’m trying to model some ways on this tiny property that we can actually put some of those functions back, in the middle of downtown, so we can have birds and pollinators and cleaner air and water.

It’s really been interesting to think about how this fits in with the bigger picture of what’s happening around me. My training is in ecological restoration, so it’s nice to come back around to that.

WHAT CAN $50 BUY YOU THESE DAYS?

Hat can $50 buy you these days?

Amanda Fuller sees unearthed potential in vacant city lots

Amanda Fuller sees unearthed potential in vacant city lots

IN COMMON: WHAT INSPIRED THIS EFFORT?

FULTER: One of the first things I noticed when I moved to Louisville was how much vacant land there is in the city. It’s like a lot of other cities in this region, there are questions of underutilized urban property. There have been city committees and task forces to bring more attention to solutions to the issue, and I was keenly aware of that. Then when my employer, Breaking Grounds, shut its doors, Peter (Thiong) and I wanted to continue working together. We had spent the last three years looking across the street at parcels of land that were exactly emblematic of the kinds of problems we were aware of in the city with vacant and abandoned properties. That put in our heads the idea that people really should be putting those parcels to productive use.

One of our major goals was to bring attention to the issue and show one simple effort – like an off-the-shelf solution – that anybody can potentially pursue. To learn about and go through it and share what we learned, so other people could do similar things.

By our own initiative, by giving presentations and through other mechanisms in the city, and through our networks, we’ve brought that to light and made the Land Bank more aware of and open to these kinds of proposals. We’ve cracked that door open and made more people aware
The majority of food consumed in American cities is transported from a distance amounting to about 1,500 miles away. And yet, in urban areas like Detroit, more than half of the population is out of reach of fresh food, shopping for meals at the corner liquor store or convenience mart. As you digest such numbers, it quickly becomes clear: in meeting the nation’s food needs, our performance is wanting, with implications for nutrition, health, community stability, and local economies. An interdisciplinary team of UW-Madison scientists is working toward solutions, supported by a $5 million grant from the U.S. Department of Agriculture. They’ve teamed with UW-Extension, the nonprofit organization Growing Power, Waukesha State University, Michael Fields Agricultural Institute and a range of community-based organizations to study ways to boost the availability and consump-

The overall goal is to integrate research, outreach, education and advocacy. Ventura explains, “leading to improved understanding of how to build and maintain successful community and regional food systems, and enhance implementation in communities at risk.”

“Change agents”

“So often, the question is, if we believe that access to healthy food is a human right, whose responsibility is it?” says Monica White, a professor of environmental justice with a shared appointment in the Nelson Institute and Department of Community and Environmental Sociology. “Some might argue it’s the market, some might argue it’s politicians, and some might argue it’s the community.”

White is specifically interested in the community aspect of the equation, studying the creative approaches grassroots orga-
nizations and communities of color have adopted in response to issues of hunger and food inaccessibility. Her past research has focused on African American resistance to food insecurity and on documenting the history of black farmers’ collectives, cooperative enterprises and experiences in the American Midwest and South.

“My interests are the novel, creative ideas that people engage in in order to increase access to healthy foods,” White explains. “Citizens of Detroit are not sitting around waiting to see what’s going to happen. They’ve done a number of things to engage and challenge the food system.”

“Taste, for example, the Peaches & Greens mobile produce market, a converted ice cream truck that delivers fresh fruits and vegetables – some of it grown on community farms with volunteer assistance – to residents of inner city Detroit who wouldn’t otherwise have access to such items. In addition to her teaching and research at UW-Madison, White serves as president of the board of directors of the Detroit Black Community Food Security Network. From mini-farms to market gardens, the organization’s urban agricultural initiatives have not only helped build community self-reliance and activity around local food security; they’ve also drawn visitors from across the country and the world as an environmental and agricultural tourism destination.

“Urban agriculture is a way in which communities are intervening in the food system and coming up with very creative ways to do so,” says White. “This cuts across race, class, age and ability.” The Detroit model says those who can afford healthy food should not be the only ones to have it.

In Detroit, large portions of the popula-
tion lack access to healthy food due to either geographic or economic boundary conditions, with African American, Hispanic and impoverished communities disproportionately affected. These communities tend to purchase food from so-called fringe markets – stores that draw the majority of their sales from lottery tickets, alcohol and tobacco, and offer little by way of fresh food.

“They sell the types of food which we know have typically been associated with diet-related illnesses,” says White. “If you’re talking about people who do not have access to transportation, or limited access, and these are the places where they access food, this is scary: How do you feed your family in a place where these are the options closest to you?”

Food insecure

Alfonso Morales, who is working on a forthcoming book about urban agriculture, says this lack of access to nutritious food options – and a correlated increase in obesity, type 2 diabetes and a range of other public health concerns – crept into urban American communities in the 1970s. “In the 70s, there were two trends: One, middle class folks started going to farmers’ markets, and two, grocery stores started seeing increased costs of doing business in low income communities and communities of color,” says Morales, a professor of urban and regional planning and a participant in the food systems project. “They started abandoning these communities, basic-

ally redlining them in the same way that neighborhoods got redlined for real estate purposes. That leaves behind few options for food.”

Applying an ecological metaphor, Morales says a strong food system requires specialization, or the creation of new “species” of food distribution, incorporating everything from street vendors and pushcart vendors to food delivery services such as Peapod and Schwans, and from street markets, farmers’ markets and typical streetfront retail to gardens and self production.

“A robust food system that produces food security is one where there’s not a reli-

ance on a single approach to food access,” he explains. “We have to be willing to make available regulatory and economic incen-
tives to permit the repopulation of our food retail environment.”

However, he says, efforts can’t stop at simply making fresh food available to consumers. For example, marketplaces that incorporate the option of nutrition assistance program payments can improve access for low- and no-income populations, but a person may not know how to – or have the equipment necessary to – prepare the market items.

“One of the problems is a lot of the folks we target have diminished their capacity to process that food in their homes,” Morales explains. “Their capacity to cook it, to store it, to serve it has all been eroded.”

“Because of this generational absence of grocery stores from their communities, because of the proliferation of fast food and microwave food, and because of poverty, where they just can’t pay their bills to have refrigeration, or their refrigerator breaks and they don’t have the money to replace it, they live literally hand to mouth,” he explains.

White says organizations in Detroit are leading a series of conversations around similar issues: “Once you grow food, how do people access it, and then once people access it, what do they do with it?”

She’s seen that community dinners and local cooking demonstrations, especially those connected to a community’s cultural heritage, can provide a springboard for action.

“Food preservation and preparation is an important element of the work we do, making sure it’s not just that I have access to healthy food, but also that my neighbors have access to healthy food.”

Ventura points to a successful community engagement project on the south side of Milwaukee that enlisted local grocers to sponsor cooking classes and feature healthy new products appropriate for the predomin-
antly Latino community. Now, two local community-based organizations continue these activities.

Morales says such skills are being revived in youth, as well, for example through once-abandoned home economics courses or Future Farmers of America activities. “These kinds of clubs and classes are making a comeback in response to the public health disaster we invited on ourselves, and in part in a proactive way, to enrich people’s lives and to revalue that knowledge and those abilities,” he says.

Growing interest

Will Allen, founder and CEO of Growing Power and co-director with Steve Ventruta of the food systems research project, says in addition to engaging and empowering at-risk communities, a sustainable food
The more you move, the healthier you’ll be. Jeff Sledge, a faculty associate of the Nelson Institute, lives by that code. He studies how people move around the city and why they live and work, and how that affects their health.

“Any time you can change habituated patterns of movement, you will impact health,” says Sledge. “As a society, we’ve done everything we can to make life comfortable – from the shoes you walk in to the chairs you sit on, to our reliance on motorized transportation and the growing amount of ‘screen time’ in our lives. That’s really detrimental, so removing a little convenience goes a long way to improve health.”

Sledge says this will involve designing the way that we live,” he continues. “This environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.

“The environment had a terrific culture of health and physical activity, weren’t getting the minimum amount of recommended exercise. Among the factors limiting their activity: Parents worried about the safety of their neighborhoods and about having their children use motorized transportation, open spaces and pathways weren’t being used. The biggest surprise came when the GPS data revealed a clustering of student families in locations distant from school. The families, primarily of Hispanic heritage, felt strongly about the quality of their school and the cultural values instilled there, and were driven by the students considerable distances to attend.
Air quality research betters public health and policy

About half of the U.S. population lives in counties that are falling air quality standards set by the Environmental Protection Agency. And globally, air pollution has been identified as the world’s biggest environmental health risk. It causes 7 million deaths per year, according to a recent World Health Organization report.

“Even though air pollution is getting better, it is still posing major health risks, even within the United States,” says Tracey Holloway, an associate professor of environmental studies at UW-Madison and faculty affiliate of the Nelson Institute Center for Sustainability and the Global Environment.

Holloway studies air quality, not only because of its critical impacts on global health, but because it offers a dynamic perspective of various sustainability factors.

“Because air quality cuts across energy, transportation, land use, weather and climate, it’s a nice lens to see how all the pieces fit together,” she says. “I enjoy that part of the problem solving.”

Air pollutants have concerned scientists and politicians since 1881, when the cities of Chicago and Cincinnati passed the first laws aimed at reducing smoke pollution caused by the proliferation of coal power.

Since then, air quality has generally been improving due to policy decisions and improvements in energy efficiency. Progress largely began with the Clean Air Act of 1970, which gave the federal government power to regulate air pollution from cars and industries.

“In some ways, air quality in the United States is a real success story,” says Holloway. “Since the 1970s, we have made reductions in most pollutants that damage human health, and even over the past five years, we have seen improvements.”

But there’s still a lot of work to do.

Moreover, efforts to improve air quality often have unintended consequences.

As the United States moves to regulate carbon dioxide along with traditional air pollutants, some control strategies may change. For example, scrubbers – devices placed in the stacks of coal-fired power plants to remove gases or particulates – reduce the emission of sulfur dioxide, a byproduct of burning coal that can cause lung disease and acid rain.

However, Holloway says that these scrubbers require a lot of energy to operate. So a power plant running scrubbers needs to generate more energy, thus emitting more carbon dioxide and contributing to global climate change.

But there are also win-win solutions, Holloway says. Switching from coal to natural gas improves power plant efficiency by moving to a fuel that emits less carbon dioxide and fewer pollutants harmful to humans. The same holds true when conserving energy, or replacing fossil fuels with renewable energy alternatives.

Because of the multiple options for improving air quality, policy makers need to be able to determine where to concentrate limited resources and political capital. Modeling developed by Holloway and other researchers can help set priorities.

“We want to know, from an air quality perspective, where you get the most figure-tive ‘bang for your buck,’” says Holloway, who also serves as deputy leader of the NASA Air Quality Applied Sciences Team, which works to connect science data and tools with policy needs for air quality control.

“For example, coal and diesel are both relatively dirty fuels,” she continues. “Coal is dirtier, but power plant emissions are often happening far from where people are living, whereas diesel trucks are driving through the cities, so there is direct exposure.”

Holloway’s team is investigating changes in emissions levels when power plants and trucks are converted to natural gas, and the resulting impact on air quality. Policy makers can use this information to make the most effective decisions.

“Well, we don’t have all the answers yet, but sometimes it’s harder to go back in time.”

Cities like Los Angeles were built in the era of the automobile, so they are spread out and residents must do a lot of driving to get anywhere. Salt Lake City was built in a basin, which often traps pollutants.

Cities like Madison are built in the summer, creating issues with ozone, a chemical that results from reactions between automobile or industrial pollutants, such as nitrogen oxides and volatile organic compounds, and sunlight.

Holloway says these challenges are difficult but they can be addressed, not only by policy makers but by everyone.

“Individuals play a big role here when thinking about how they use electricity, how they heat and cool their home, how they get around town, and even paying attention to when there are dirty air days and clean air days,” she explains. “If it’s a bad air day in your community, you can take steps like trying to drive less, or avoiding moving your lawn in the middle of the day, and avoiding using cleaning products with volatile compounds.”

Because of policies such as the Clean Air Act as well as growing awareness, Americans have made great strides in improving air quality. For example, when Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”

Holloway first arrived at UW-Madison in 2003, every Wisconsin county along the Lake Michigan coast violated the federal ozone standard. Today, every Wisconsin county but one complies with that standard, even though it has toughened.

These changes not only improve air quality; they also save money. Studies have shown that for every dollar spent on improving air quality, $2 to $22 is saved on health care. And clean air means more than just savings.

“I would say that, as citizens, we’ve decided that we value clean air. It means that we can walk out of our door and not have to wear masks,” says Holloway. “But sometimes it’s hard to go back in time.”
A livable city solution
the powerful potential of microgrids

BY ERIC ANDERSON

A MAJORITY OF THE WORLD’S POPULATION LIVES IN CITIES, WHICH CONSUME 75 PERCENT OF THE WORLD’S RESOURCES AND EMIT MOST OF ITS GREENHOUSE GASES. THE United Nations estimates that by 2050, an additional three billion people will move into these dense, resource-intensive urban environments. “Projecting from current trends, you realize that we should have a plan for how this change unfolds,” says Mike Corradini, director of the Wisconsin Energy Institute and professor of engineering physics.

As urban growth increases stress on global systems, Corradini is among a team of UW-Madison researchers working to develop solutions that contribute to the livability of future cities. When it comes to urban energy—and its ever-increasing consumption—Corradini believes resiliency, reliability and accessibility will be critical factors in ensuring a sustainable supply. “When you’re talking about a livable city, you’re not just talking about energy or energy use,” he says. “It’s a combination of how we use water, create food, construct buildings, and transport people or goods. These are all largely connected and interdependent.”

Of course, different cities have different energy needs, which means that livable city solutions tend to vary according to local need. In the United States, for example, where infrastructure and utility companies have made access to electricity nearly ubiquitous, plans for the future tend to focus on creating energy systems with greater efficiency and reliability. The focus in cities like New York or New Orleans is on building infrastructure to make cities more resilient when faced with extreme weather or natural disasters—by providing backup power during outages, as well as helping to ease systems back online as outages end.

In developing countries, however, electrification systems are often weak or nonexistent and the focus tends to lie elsewhere. In Uganda, where less than nine percent of the population has access to electricity, communities prioritize the development of individual off-grid solutions that have the flexibility to grow and meet future needs. What’s certain is that worldwide growth of urban centers will continue to pose energy challenges. And these challenges carry with them an opportunity to amplify the impact of livable-solutions planning and policy. By improving the places people already reside and preparing early for where they will live in the future, we can improve how we interact with the environment on a very large scale.

Microgrid researchers in the UW-Madison College of Engineering and the Wisconsin Energy Institute are taking up this challenge by developing an energy solution with the potential to strengthen all three critical factors of energy in a livable city: resiliency, reliability and accessibility. The microgrid, in other words, may offer a powerful, versatile and wide-ranging solution to a variety of energy challenges at different scales and under a range of conditions.

resiliency

A microgrid is a small, self-contained electric power system with the capability to seamlessly connect to and disconnect from the traditional grid, the network of power lines that move electricity from generating stations to users. It includes all of the components of the traditional energy infrastructure (generation, distribution and consumption) consolidated to accommodate smaller consumer base loads such as individual buildings, hospitals or campuses. Many cities consume their energy predominantly from fossil fuel sources distributed through centralized generation systems. But this type of expansive infrastructure also comes with some risk. “It’s unlikely that, particularly in the United States, we’ll completely replace the bulk power system,” says Paul Meier, a Wisconsin Energy Institute scientist and Nelson Institute alumnus (Ph.D. Land Resources and Energy Analysis and Policy ’02). “It’s a vast infrastructure and, right now, there is little in the way of incentives to change it.”

“But, there are opportunities to improve how the system operates or where our energy comes from that could benefit cities,” adds Meier, whose research focuses on the economic feasibility and impacts of resource planning models.

The U.S. Department of Energy estimates that power outages and grid failures cost American businesses $100 billion annually. But when these interruptions occur, microgrid consumers can switch to electricity generated by solar or stored locally, creating a more resilient and stable energy supply. In the case of hospitals, where the system can be designed to be even more robust and self-sustaining, key health services can be maintained throughout an outage.

Microgrids also create the flexibility to integrate energy from rooftop solar installations, nearby wind turbines or other distributed sources. These small-scale renewables have struggled to become cost-competitive with energy-dense fossil fuels at a utility scale. The microgrid can thus serve as a more immediate conduit between alternative energy resources and consumers.

reliability

In India, rolling blackouts—an intentional shutdown of electricity distribution in certain areas to avoid overstressing the grid and creating a total system blackout—affect both rural and urban populations. In 2012, India experienced a massive electricity outage that affected more than 600 million people for many days. The outage crippled much of the country, bringing trains to a halt and leaving hospitals in the dark. “At night you might see the factories shut down, so that power plants can divert electricity to people’s homes. They’re trying to be as equitable as possible,” says Giri Venkataramanan, a UW-Madison professor of electrical and computer engineering. “For example, during irrigation season, more power will be transmitted to rural regions for pumping water out of the ground for the crops. At those times cities suffer, but people have adapted.”

In many Indian cities where households or businesses have grid access but are forced to live “off grid” throughout the day, a home energy system combining their own generation and storage capacity fills in for the prescheduled gaps. This system is essentially an incomplete microgrid, and provides a particularly possibility-rich opportunity for improvement in the future.

“Currently there is no interconnectivity among these makeshift microgrids,” Venkataramanan says. “We know it can be done. The challenge is in figuring out how to use the assets that people have already invested in to help the grid during peak demand times.”

accessibility

Microgrids can complement a grid system by providing backup power for planned or unplanned outages. But in rural communi-
Heat waves are the most deadly form of natural disaster, taking far more human lives than dramatic events such as hurricanes and earthquakes.

“There tends to be very little awareness about the dangers of extreme heat,” says Richard Keller, a medical historian and affiliate of the Nelson Institute Center for Culture, History and Environment. “It’s the sort of thing that we often think of as an inconvenience rather than a true danger.”

Such ambivalence can be fatal. When a heat wave struck Europe in the summer of 2003, 30,000 people died. By comparison, Hurricane Katrina — one of the five deadliest hurricanes in the history of the United States — caused 1,836 deaths in 2005.

Keller set out to learn more about those lost in the European heat wave, to determine who had died and why. After reading every document he could access from his computer in Madison, he traveled to Paris, where more than 1,000 people had perished during the 2003 event. He dug through French archives, and then he hit the streets.

One morning in Paris, at a local café, Keller saw an example of a social safety net in action as an older neighbor stepped through the door. “He walked into the café and checked in with the bartender, then handed the bartender something and leaned over,” says Keller. “The bartender put eye drops in the man’s eyes and helped him take his medication. That suggested to me that the elderly man was plugged into a social network.”

At the time, Keller was comparing two neighborhoods — one that was older, and one that had been renovated in the 1970s. The older neighborhood was full of traditional cafés and bakeries, mainstays of Parisian social life. The newer neighborhood consisted of high-rise apartment buildings, and the traditional cafés hadn’t been rebuilt after they were bulldozed.

And there were distinct demographic differences. The people in the traditional neighborhood were more financially secure, suggesting they would be less vulnerable to heat waves. But they were also generally older, which would make them more vulnerable.

When the heat wave of 2003 hit, people in the newer neighborhood — who were younger on average — died at much higher rates than people in the older neighborhood. Why? Keller suspects that the breakdown of social infrastructure may be at fault.

“The loss of neighborhood, through the loss of the social networks that are embedded in bakeries and cafes, indicates to me a powerful degree of vulnerability,” says Keller. “There is something lost in the transition to modern housing.”

While it can be a challenge to manufacture a sense of community, Keller suggests that neighborhoods can be designed with sociability in mind.

The best solutions increase face-to-face encounters with neighbors, he says. That includes simple things like sidewalks, retail stores within neighborhoods, or more cafes. Limiting parking can even increase sociability, because it forces people to spend time outside of their cars.

The bottom line: Finding ways to enable social networks through community planning may save lives. When extreme events such as heat waves occur, neighborhoods with more social interaction are likely to be more resilient.

“Social isolation dramatically increases the danger for the elderly, poor, or mentally or physically disabled,” says Keller. “Of those groups, the elderly are the most at risk, according to Keller. People become less able to regulate body heat as they grow older and thus are less resilient under heat stress. Their sensory systems don’t work as well; older people often don’t feel as thirsty as they should, and they might feel cold when they are truly too hot. These factors are particularly dangerous because seniors often live alone.

Richard Keller

Global sea levels have risen almost nine inches since 1870, driven by the thermal expansion of ocean water and the melting of glaciers as the planet warms. According to the National Oceanic and Atmospheric Administration, this climate-related trend is accelerating, with enormous implications for coastal communities.

Much of the research on this subject has focused on broad patterns, such as how much land and how many people are at risk of being flooded out. These analyses typically focus on regional, national or global scales.

“When you examine large geographic scales, you are masking a lot of important heterogeneity in the population,” says Katherine Curtis, an associate professor of community and environmental sociology. “Social, economic and political vulnerability are masked.”

Curtis teamed with Anammarie Schneider, an associate professor of environmental studies and fellow scientist in the Nelson Institute Center for Sustainability and the Global Environment, to model sea level rise and population dynamics at a county scale. That allowed them to consider demographic factors such as age, sex and racial composition of communities.

“We know that some populations, because of environmental, social, economic and demographic conditions, have greater vulnerability than others,” Curtis explains. Their study highlighted four areas: southern Florida, coastal South Carolina, northern New Jersey and the Sacramento Valley of California. They looked at the social dynamics of these places, including who was moving where, because past disasters had shown these to be critical factors.

For example, Hurricane Katrina highlighted the social inequalities of disaster prevention and recovery. Affluent people could afford to evacuate and later rebuild; poorer people could not. The researchers are trying to predict where similar problems will occur with rising waters.

“People who are vulnerable and displaced tend to move to equally vulnerable places,” says Curtis. “Think about it: What is affordable and what is accessible? And what determines affordability and accessibility?”

Affordable neighborhoods are often potentially in harm’s way, she explains. So it may be a challenge for these climate refugees to afford housing outside the reach of future sea level rise.

But wherever these climate refugees end up, whether temporarily or permanently, more problems are likely to follow.

“The thing that is most interesting to me is migration,” says Curtis. “What happens in one place doesn’t just affect that loca-
Extreme weather event powers simulation tool

BY MEG GORDON

Record-shattering rainstorms that hit west-central Wisconsin in June 2008 caused catastrophic damage, including the televised failure of an earthen dam containing Lake Delton. The week-long rain barrage flooded 810 square miles, swapped sewage treatment plants and contaminated wells. These events prompted UW-Madison researchers to ask: What if that same downpour had happened in Eau Claire, Madison, or any other location?

Answering that question becomes more crucial each year. Heavy rain events are on the rise in Wisconsin, according to scientists at the Nelson Institute Center for Climatic Research.

To enable communities to understand their vulnerabilities, Kenneth Potter, a UW-Madison professor of civil and environmental engineering and affiliate of the Nelson Institute, and David Liebl, a stormwater specialist with UW Cooperative Extension, have developed a new tool to help local decision makers see how their stormwater management systems would handle an enormous rain event. The computer simulation program can be used in conjunction with hydrologic models to determine what would happen if the 2008 storm had been centered over any region.

Potter and Liebl, who co-chair a stormwater working group for the Wisconsin Initiative on Climate Change Impacts, say this exercise can help infrastructure designers and managers understand the increasing risk of extreme events in a changing climate. It can also help update design and management tools, which currently rely on rainfall scenarios that do not account for rising temperatures, seasonal shifts and amounts of rainfall, and impacts to ecosystems and property.

The innovative program allows local municipalities to test their stormwater management systems and infrastructure through simulation, using the real numbers of the Baraboo storm system.

“Being able to test our infrastructure against known damaging storms is very beneficial, especially since we can move the most intense point wherever we want to test,” says Jeremy Balousek, an engineer with Dane County’s Land and Water Resources Conservation Department, which is using the program.

“I think that’s very effective for helping a community to think through the impacts. It shows that we aren’t only projecting fancy models,” Sally Kefer, a land use specialist with the Wisconsin Department of Natural Resources (DNR), is helping Wisconsin communities adapt. “Climate change adaptation is really about sustainability and building community resiliency,” says Kefer, a member of the Wisconsin Initiative on Climate Change Impacts (WICCI), a collaborative effort between DNR, the Nelson Institute and a number of affiliate organizations.

“We’ve already seen extreme weather changes cause damage to expensive infrastructure and homes.”

A few communities have moved forward with adaptation efforts. One example is La Crosse, where Kefer led a recent study funded by the Association of State and Territorial Health Officials.

The project began in 2012, when more than 50 La Crosse community leaders met with CCR scientists and WICCI staff for a daylong workshop to discuss climate change science, potential changes and risks associated with climate change, and strategies to prepare for those changes.

“We asked people to share their experiences of extreme weather events,” says Kefer. “I think that’s very effective for helping a community to think through the impacts. It shows that we aren’t only projecting fancy models.”

La Crosse is a city of 50,000 people sandwiched between a series of bluffs and the Mississippi River. Its geography makes it vulnerable to flooding, so more and larger storm events, combined with a projected increase in winter rainfall, means that La Crosse will see increasing risk as the climate warms. The community has already experienced flooding in new areas.

At the 2012 workshop, Kefer and her team directed the conversation toward how communities could proactively address flooding risks, rather than dealing with destruction of property and infrastructure after the fact. Due to limitations in the city’s stormwater system, the cheapest option appeared to be increasing infiltration of rainwater.

Because cities are so heavily paved, the rate at which water can trickle into the soil is limited. Planners use small planted areas (called bioretention cells) on roads, rainfall gardens, and boulevard-style streets, and an inconvenience, with a few inches of standing water remaining for less than two days.

FLOODING isn’t the only issue brought on by climate change, Kefer says adaptations involve a number of infrastructure decisions, including which streets to plant. The tree species that thrive today won’t necessarily survive 50 years from now.

Kefer expects, noting that tulip poplar and other warmer-climate trees are likely to be more common in Wisconsin’s future.

As extreme weather events and the resulting risks to public health increase, city leaders will also need to map out their most vulnerable populations and make constituents aware of locations that can serve as tornado shelters or heat refuges.

After the WICCI workshop in La Crosse, community leaders have been following through. The city has implemented more green infrastructure and a green streets ordinance that calls for more boulevard-type roadways, newly planted trees and shaded bike lanes, more places for people to gather, and, as a result, increased safety.

Kefer hopes La Crosse and other Wisconsin communities will continue implementing climate change adaptation measures, providing safety and stability for residents across the state.

Helping communities prepare for change

BY DONALD RADCLIFFE

Over the last several decades, Wisconsin has seen an increase in extreme weather and variability, and these conditions are likely to become more common in the years ahead. Scientists in the Nelson Institute Center for Climatic Research (CCR) project a sharp rise in average annual temperatures in coming decades — somewhere between 4 and 9 degrees Fahrenheit — spawning more frequent and intense storms, droughts and heat waves.

These trends will challenge cities throughout the state. "Climate change adaptation is really about sustainability and building community resiliency," says Kefer, a member of the Wisconsin Initiative on Climate Change Impacts (WICCI), a collaborative effort between DNR, the Nelson Institute and a number of affiliate organizations. "We’ve already seen extreme weather changes cause damage to expensive infrastructure and homes.

A few communities have moved forward with adaptation efforts. One example is La Crosse, where Kefer led a recent study funded by the Association of State and Territorial Health Officials. The project began in 2012, when more than 50 La Crosse community leaders met with CCR scientists and WICCI staff for a daylong workshop to discuss climate change science, potential changes and risks associated with climate change, and strategies to prepare for those changes.

“We asked people to share their experiences of extreme weather events,” says Kefer. “I think that’s very effective for helping a community to think through the impacts. It shows that we aren’t only projecting fancy models.”

La Crosse is a city of 50,000 people sandwiched between a series of bluffs and the Mississippi River. Its geography makes it vulnerable to flooding, so more and larger storm events, combined with a projected increase in winter rainfall, means that La Crosse will see increasing risk as the climate warms. The community has already experienced flooding in new areas.

At the 2012 workshop, Kefer and her team directed the conversation toward how communities could proactively address flooding risks, rather than dealing with destruction of property and infrastructure after the fact. Due to limitations in the city’s stormwater system, the cheapest option appeared to be increasing infiltration of rainwater.

Because cities are so heavily paved, the rate at which water can trickle into the soil is limited. Planners use small planted areas (called bioretention cells) on roads, rainfall gardens, and boulevard-style streets, and an inconvenience, with a few inches of standing water remaining for less than two days.

FLOODING isn’t the only issue brought on by climate change, Kefer says adaptations involve a number of infrastructure decisions, including which streets to plant. The tree species that thrive today won’t necessarily survive 50 years from now.

The spread of the emerald ash borer, an invasive insect expected to wipe out most of La Crosse’s ash trees, makes this a pressing issue. As foresters plan to replace the ash trees, they’ll need to consider climate change.

“Ecologically, we’ll start looking more like Tennessee and Kentucky,” Kefer explains, noting that tulip poplar and other warmer-climate trees are likely to be more common in Wisconsin’s future.

As extreme weather events and the resulting risks to public health increase, city leaders will also need to map out their most vulnerable populations and make constituents aware of locations that can serve as tornado shelters or heat refuges.

After the WICCI workshop in La Crosse, community leaders have been following through. The city has implemented more green infrastructure and a green streets ordinance that calls for more boulevard-type roadways, newly planted trees and shaded bike lanes, more places for people to gather, and, as a result, increased safety.

Kefer hopes La Crosse and other Wisconsin communities will continue implementing climate change adaptation measures, providing safety and stability for residents across the state.
system must build the infrastructure for future generations of entrepreneurs and agriculturalists. His farm and community food center, based in Milwaukee, has become the largest urban agriculture organization in the world, with 300 acres of outside production, 25 acres of greenhouses and a large-scale aquaponics system. His team recently received the largest farm-to-school procurement in USDA history, selling 40,000 pounds of carrots to schools in Chicago and Wisconsin. “I didn’t set out to be the world’s largest along the continuum it just happened,” Allen says. “And part of that was to prove that this can be done. To prove that you can change the dynamics of a city by being able to grow enough food like we do.”

But organizations alone can’t solve the world’s challenges, he says. He sees his role as bolstering the next generation with the skills and drive required.

“The nonprofits are going to build the food system that we need. No, I think, this will help us do that,” he says. “And part of that was to prove that this can be done. To prove that you can change the dynamics of a city by being able to grow enough food like we do.”

Bradshaw Knight Fund
Endowed Chair for Culture, History and Environment
James A. Knight

Gaylord A. Nelson Fund
Distingushed Chair
Robert A. Bakken

Gaylord Nelson Environmental Studies Fund
Robert H. and Vivian R. Miller

Gaylord Nelson Student Fund
Susan D. Rotter

Gaylord Nelson Student Travel Fund
Laurie K. Elwell

Gift to support political ecology student research
A new Nelson Institute fellowship to support graduate students who research the use of political ecology was established in March with a $250,000 gift from an anonymous graduate of the institute. The fellowship will fund students working at the intersection of policy, politics and the environment.

Political ecology, which connects politics and economics to problems of environmental control and ecological change, is a major area of study for Nelson Institute Director Fund Robbins. As a researcher and educator, he specializes in the political ecology of the food system, student funding, or for more information about the political ecology fellowship, please contact Robbins at director@nelson.wisc.edu or (608) 265-5296.

Nelson Institute Academic Programs Fund
Eve Foundation Inc.
Carl B. and Marilyn K. Buehl

Nelson Institute Graduate Student Fund
Wendy and Steven A. Bleyer

Nelson Institute Student Experience Fund
Jane A. Dennis

Nelson Institute Student Experience Fund
Margaret L. Krome and Stephen A. Bleyer

THANK YOU TO ALL WHO SUPPORT THE NELSON INSTITUTE
We extend deep thanks to the hundreds of individuals, families and organizations that have made financial contributions to the Nelson Institute. These gracious alumni, friends and program sponsors contributed between Nov. 14, 2013 and June 11, 2014.

Investing in Nelson

Nelson Institute International Scholarship Fund
Glenn J. Hannahs

Nelson Institute International Scholarship Fund
Eve Foundation Inc.
Carl B. and Marilyn K. Buehl

Nelson Institute Visiting Scholars Program Fund
Gaylord and Mary Louise Nelson

Nelson Institute Visiting Scholars Program Fund
Harold and Mary Jo Skaife

Nelson Institute Visiting Scholars Program Fund
Karen M. and Theodore T. Cheng

Nelson Institute Visiting Scholars Program Fund
John A. and Christie N. Delashmit

Nelson Institute Visiting Scholars Program Fund
Rebecca Wodder

Nelson Institute Visiting Scholars Program Fund
William H. and Sandy L. Trefz Outstanding Scholars
Tom W. Modica

Clayton and Martha A. Hayes

Eric D. and Helen H. Booth

Stevie B. and John A. Wisniewski

Endowed Chair in Culture, History and Environment
James A. Knight

Center for Culture, History and Environment Forward Fund
Nancy W. Theriault

2014 Earth Day Conference Fund
Albert E. and Jennifer C. Edens

American Family Insurance Company
American Forestry and Conservation Association
American Forestry Institute
American Forestry Institute Foundation
American Transmission Company
Common Ground High School
Georgina Muriel Hall Foundation
Greater Madison Community Foundation
Greyhound Cooperative Movement
Green Lakes Alliance Inc.
Lamont Cabin Progressives
Lake Michigan Morrant Trust
Lakeshore Community Foundation
Lakeshore Education and Research Foundation
Lakeshore Environmental Foundation
Lakeshore Environmental Foundation Trust
Lakeshore Foundation
Lake Michigan Environmental Center
Lakeshore Nature Conservancy
Lakeshore Trust Ltd. Inc.
Legend Sports and Entertainment
Legend Sports and Entertainment
The Nature Conservancy
The Nature Conservancy
The Nature Conservancy
The Nature Conservancy
The Nature Conservancy
The Nature Conservancy
The Nature Conservancy

In April, John Nelson, past chair of the Board of Visitors and managing director of Global Infrastructure Asset Management LLC, was awarded the title of Emeritus Member in honor of his years of dedicated service to and on behalf of the Nelson Institute. He is the second person to hold this honorary title, joining inaugural recipient Jay Carlson.
Energized in Uganda

A winter break of building and learning across the world

BY ANNA MEDING

January 9, 2014

“Keep Up!” Dorothy calls over her shoulder. I am briskly walking through the stalls of the main market in Kampala, Uganda, each space crowded with clothing, jewelry, electronics, and most of all, people. Due to lost luggage, I am still in my sweaty travel clothing and am counting thousands of market-goers. Dorothy ducks into a small store and I follow.

My head lifts and my eyes travel around the small room. It is stacked so high with jeans that I do not notice the store owner standing right in front of me. Surprised, I break my upward stare. He is short and stylish, wearing denim jeans, a printed T-shirt, and a thin gold chain around his neck. He is short and stylish, wearing denim jeans, a printed T-shirt, and a thin gold chain around his neck. Dorothy ducks into a small store and I follow.

I am still in my sweaty travel clothing and am counting thousands of people. Due to lost luggage, I am still in my sweaty travel clothing and am counting thousands of market-goers. Dorothy ducks into a small store and I follow.

I am still in my sweaty travel clothing and am counting thousands of people. I am still in my sweaty travel clothing and am counting thousands of people. Dorothy ducks into a small store and I follow.

The first presentation by Gideon explained what biogas was and how it would be used for cooking at their school. Next came the skits where American undergraduates performed tasks that would be made easier with biogas, such as no longer needing to carry firewood, and finally came a game where we displayed images of different waste types and asked the children if those materials could enter an anaerobic digestion system. The children shouted out the answers, and it was great to hear a few hundred voices cheering “biogas!”

January 16, 2014

My body feels lighter knowing I have completed the educational biogas workshop. In the hot Ugandan sun, I have a chain of children grabbing my hands as I try to move over to a bench. We had spent the past hour dancing in the courtyard of Lweza, and I honestly just need to sit down and rest. I find a seat along the side of the school and instantly have young girls on either side of me and one in my lap. They chatter away, mostly in Luganda, of which I understand none. Their speech and their continuous smiles keep me more than preoccupied.

The past week and a half had been spent planning presentations, creating visual games, encouraging our fellow university students to participate in skits, compiling a packet of information for the Lweza teachers, and organizing a fantastic lunch. During the course of the same week, my undergraduate colleagues worked on multiple projects that brought out aspects of our semester-long capstone to life, from engineering a solid and liquid separator technology for use in the digester, to performing interviews and waste audits around the community.

When the sunny day of our workshop finally arrives, we all crowd into the white van and traverse the bumpy roads to Lweza. Attire begins arriving slowly, by the time the workshop begins, the main hall contained a few hundred pairs of eager eyes watching and learning about their new anaerobic digester.

The first presentation by Gideon explained what biogas was and how it would be used for cooking at their school, next came the skits where American undergraduates performed tasks that would be made easier with biogas, such as no longer needing to carry firewood, and finally came a game where we displayed images of different waste types and asked the children if those materials could enter an anaerobic digestion system. The children shouted out the answers, and it was great to hear a few hundred voices cheering “biogas!”

What do you say?

In Common welcomes engaging first-person essays from Nelson Institute alumni on topics related to your lives, professions or perspectives. The tone can range from serious to humorous, from sad to uplifting. Any alumnus or alumna may send an idea for an essay, or a draft to be considered for publication, to incommon@nelson.wisc.edu.

I lean back in my comfy red chair and reflect on my entire Ugandan experience. I would never have believed that one class could take me so far beyond the borders of the classroom, so greatly influence the areas in which I hope to continue my education, and create such a strong network of global connections.

I would never have believed that one class could take me so far beyond the borders of the classroom, so greatly influence the areas in which I hope to continue my education, and create such a strong network of global connections.

I would never have believed that one class could take me so far beyond the borders of the classroom, so greatly influence the areas in which I hope to continue my education, and create such a strong network of global connections.

I would never have believed that one class could take me so far beyond the borders of the classroom, so greatly influence the areas in which I hope to continue my education, and create such a strong network of global connections.
Hobie and Dannenberg honored with alumni awards

In March the Nelson Institute named the recipients of two new annual alumni awards, recently established to spotlight some of the accomplishments of the nearly 4,000 alumni of the institute’s graduate and undergraduate degree and certificate programs.

LYNN HOBIE, who earned a master’s degree in Land Resources with a certificate in Energy Analysis and Policy in 1984, received the Distinguished Alumni Award. Hobie is senior vice president of Madison Gas and Electric, where she has worked for 28 years in a variety of roles. She currently oversees corporate communications, customer energy efficiency and renewable energy programs, energy products and services, economic development, residential and community services, business marketing, web services and social media. She has been deeply involved in numerous community organizations and serves on several boards and committees. She has participated in and provided support for numerous Nelson Institute events, and she has offered professional development advice for students in the Nelson Institute Community Environmental Scholars Program.

MATT DANNEBERG is the first recipient of the Early Career Alumni Award. Matt is the central Wisconsin organizer for the League of Conservation Voters, working to recruit new voters concerned about conservation, develop leaders, and encourage activists on conservation issues. He also oversees the organization’s Madison-based volunteer and internship programs and the statewide Native Vote program. Dannenberg joined the organization in 2010 after earning a bachelor’s degree in political science with a certificate in environmental studies from UW-Madison. He has mentored dozens of new voters concerned about conservation, developed leaders, and encouraged activists on conservation issues. He also oversees the organization’s Madison-based volunteer and internship programs and the statewide Native Vote program. Dannenberg joined the organization in 2010 after earning a bachelor’s degree in political science with a certificate in environmental studies from UW-Madison. He has mentored dozens of new voters concerned about conservation, develop leaders, and encourage activists on conservation issues. He also oversees the organization’s Madison-based volunteer and internship programs and the statewide Native Vote program.

Ezra Meyer (M.S. WRM ’09) serves as a water resources specialist with Clean Wisconsin, assisting in the design and implementation of the organization’s water program.

Justin Mog (M.S. LR ’99, Ph.D. LR ’03) is assistant to the provost for sustainability initiatives at the University of Louisville, leading efforts to help the campus become more environmentally and socially responsible. Initiatives include reduced energy use, single-stream recycling, increased use of local food, environmentally responsible building design, green purchasing policies and better accessibility for bicycle riders.

Camille Zanoni (ESC ’09) was profiled by the Wisconsin State Journal in April, discussing the growth and future goals of the Aldo Leopold Nature Center, where she serves as interim executive director and vice president of advancement. The organization celebrates its 20th anniversary in 2014. To read the interview: go.wisc.edu/zanoni

After six years operating a guide service at Zion Adventure Company near Zion National Park in Utah, Nick Wilkes (ESC ’10) has returned to Madison and started three small businesses: Nick Wilkes Photography, Infusion Design and Devils Lake Climbing Guides, offering rock climbing trips and courses at Devil’s Lake State Park.

Alumni authored books on cooperative conservation, stream life

Ron Dolen (M.S. WRM ’09), Katie Songer (M.S. ER ’09) and Michael Miller, in collaboration with dozens of biologists and ecologists, have prepared Field Guide to Wisconsin Streams, a unique compendium of the plants and animals known to inhabit Wisconsin’s 84,000 miles of streams. The guide includes more than 1,000 images illustrating plant, fish, invertebrate, amphibian and reptile species, along with detailed ecological and taxonomic notes, descriptions of loon-like species, and distribution maps.

In Common Spring/Summer 2014 31

Locate other alumni and help us reach you

The Wisconsin Alumni Association offers an online service to help you locate other UW-Madison graduates Visit uwalumni.com and log in to the Alumni Directory. Please use the “Update Profile” page to keep your own listing and mailing address current. This helps ensure that you continue to receive In Common.

Networking online

Nelson Institute alumni can find opportunities for social networking on Facebook and Twitter, for professional networking on LinkedIn, and see snapshots from campus and student life on the photo-sharing site Instagram.

facebook.com/NelsonInstitute
twitter.com/NelsonInstitute
instagram.com/NelsonInstitute

We encourage our students, alumni, faculty, staff and friends of the Nelson Institute to connect in our LinkedIn group. To join the group: go.wisc.edu/NelsonLinkedIn

In search of a winning chili recipe? By the creations of grad student champs at the 2014 Nelson Institute chili cook-off. As students, faculty, staff and alumni sampled from the competing crocks, a panel of judges deemed Stubb’s chili, prepared by Chris Bocast, and Dei chili, a preparation with an Indian twist from Vania Shhikuravane and Amulya Vishwasrao, to be the best. Get cooking: go.wisc.edu/chilirecipes
NELSON INSTITUTE ALUMNI

Rendezvous on the Terrace

FRIDAY SEPTEMBER 12
5:00-7:00 PM
TRIPP DECK
MEMORIAL UNION

NELSON.WISC.EDU/ALUMNI

JORDAHL PUBLIC LANDS LECTURE

featuring William Cronon

Cronon’s remarks will explore the meaning of the Wilderness Act upon its 50th anniversary.

Tuesday, October 21 • 7:00 PM • Shannon Hall • Memorial Union
800 Langdon St, Madison, WI