



Institute for Sustainability, Energy, and Environment (iSEE)

Annual Report 2021-22

ACTIONABLE RESEARCH ...



... EDUCATION & OUTREACH ...



... CAMPUS SUSTAINABILITY



OVERVIEW

In July 2022, Madhu Khanna was selected to become the Alvin H. Baum Family Fund Chair & Director of the Institute for Sustainability, Energy, and Environment (iSEE). She has been with the Institute since its inception in December 2013, first serving as Associate Director for Education & Outreach, then as Associate Director for Research, and finally since Fall 2020 as Interim Director.

From the Incoming Director ...

As iSEE approaches its ninth anniversary at the University of Illinois, we are pleased to present this Annual Report, updating you on our accomplishments in research, education & outreach, and campus sustainability.

Research

By helping to attract more than \$36 million in new external funding between July 2021 and June 2022, iSEE continues to have a major influence on transdisciplinary science on campus and with partner institutions.

And we are at the tip of the iceberg with considerably more large grant submissions pending or under consideration — including a five-year, \$150M U.S. Department of Energy renewal for the Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) in collaboration with the Carl R. Woese Institute for Genomic Biology and 20 partner institutions.

Our interdisciplinary and campus as a living lab seed funding initiatives have expanded our portfolio with promising new ideas that we hope will attract sizable grants for our researchers. And we continue to engage our Energy, Water, Global Climate Change, and Sustainable Ag scholar groups to build transdisciplinary teams for new and emerging funding opportunities from federal agencies, foundations, and the private sector.

Education & Outreach

On the education front, our campuswide minor — the Sustainability, Energy, and Environment Fellows Program — has seen sustained growth. The introductory and capstone classes are filled each year — as are the courses that comprise the Certificate in Environmental Writing, which produces the popular *Q Magazine*.

A new addition to our educational offerings is the Environmental Leadership Program (ELP), and the inaugural cohort of 21 students raved about the experiential learning they did during the Spring 2022 semester while working on policies, communications, and pitches directly to local governments and the state Legislature.

Some outreach efforts were hampered temporarily by the COVID-19 pandemic, but the Fall 2021 virtual iSEE Congress on circular food systems drew 250 attendees for discussions on exploring new technologies, transforming to a circular economy, and reducing and repurposing agricultural waste.



Campus Sustainability

Working closely with passionate student organizations, our team was pleased to celebrate Sustainability Month in October 2021 and Earth Month in April 2022 with a mix of in-person, virtual, and hybrid events to celebrate the accomplishments on campus and build momentum toward continuing Illinois Climate Action Plan (iCAP) goals.

iSEE has grown its Greener Campus programs, hosted monthly virtual TED Talk discussions, and reinstated and expanded the popular Illini Lights Out program.

Finally, through the efforts of students, faculty, staff, and administrators, campus remains a recognized sustainability leader with recognitions at the national and international level.

Our Gracious Donors

All of our Institute's efforts have required campus and community engagement — but they have been made possible by endowments from our staunchest supporters. A special word of thanks to:

- The Alvin H. Baum Family Fund, our founding benefactor led by Joel Friedman and Loretta Namovic, which continues to support existing programs such as our annual Congress and Critical Conversation as well as the newly established Environmental Leadership Program;
- Stuart and Nancy Levenick, whose endowments have created a Chair and funded Resident Scholars in Sustainability Leadership — as well as a program for incorporating sustainability in courses across campus; and
- Janelle Joseph, whose gifts fund an annual student environmental writing contest as well as travel for *Q Magazine* reporters.

Please turn the page for a deeper dive into iSEE's activities during the past year.

Madhu Khanna

Institute Attracts \$36M+

Between July 2021 and June 2022, iSEE helped University of Illinois Urbana-Champaign researchers bring in more than \$36.6 million in new research funding.

I-GUIDE: \$15M

In Fall 2021, iSEE announced it will collaborate on a major funded center that will enable geospatial data-driven scientific discovery at the University of Illinois Urbana-Champaign, and the resulting research will lead to better understanding of the risks and impacts of climate change and disasters.

The \$15 million Institute for Geospatial Understanding through an Integrative Discovery Environment (I-GUIDE) will receive the funding over five years as part of the National Science Foundation's Harnessing the Data Revolution, which establishes five institutes across the United States to explore questions at the frontiers of science and engineering.

"The goal of I-GUIDE is to revolutionize theories, concepts, methods, and tools focused on data-intensive geospatial understanding for driving innovative cyberGIS and cyberinfrastructure capabilities to address the most pressing resilience and sustainability challenges of our world, such as biodiversity, food security, and water security," said I-GUIDE Director Shaowen Wang, Head of the Department of Geography and Geographic Information Science and Founding Director of the CyberGIS Center for Advanced Digital and Spatial Studies (CyberGIS Center).

Collaborating scientists and institutions from around the country that are part of I-GUIDE will work with the CyberGIS Center in partnership with iSEE and the U of I System's Discovery Partners Institute.

SCAPES: \$10M

In October 2021, the U.S. Department of Agriculture (USDA) announced funding for a new project led by iSEE Director Madhu Khanna to optimize design for "agrivoltaic" systems — fields with both crops and solar panels — that will maintain crop production, produce renewable energy, and increase farm profitability.

Sustainably Colocating Agricultural and Photovoltaic Electricity Systems (SCAPES) will provide a comprehensive analysis of the transformative potential of agrivoltaics.

The \$10 million, four-year project, funded through the USDA's National Institute of Food and Agriculture (NIFA) Sustainable Agriculture Systems program with the U of I as the lead institution, will study agrivoltaics in a variety of land types and climate scenarios (Illinois, Colorado, and Arizona).

"Our goal is to maintain or even increase crop yield, increase the combined (food and electricity) productivity of land, and diversify and increase farmers' profits with row crops, forage, and specialty crops across a range of environments," Khanna said.



in External Grants in FY22

I-FARM: \$4M

In May 2022, NIFA funded a new collaboration between iSEE, the National Center for Supercomputing Applications and the Center for Digital Agriculture at Illinois that will create an integrated farm of the future in the U.S. Midwest. NIFA’s “Farm of the Future” proposal process was extremely competitive, and only one was awarded from across the nation.

“I-FARM: Illinois Farming and Regenerative Management,” a nearly \$4 million, three-year project, will develop an 80-acre agricultural testbed, where commodity crops (corn and soybean) and livestock are farmed using advances in technology (pictured) and synergistic and sustainable practices. It is led by Girish Chowdhary, Associate Professor of Agricultural & Biological Engineering and Computer Science.

LC3M: \$2.1M

In Fall 2021, the Leverhulme Centre for Climate Change Mitigation (LC3M) announced \$2.1M in additional five-year funding from for U of I researchers, led by Evan DeLucia (Emeritus Professor of Plant Biology), Carl Bernacchi (U.S. Department of Agriculture’s Agricultural Research Service), and new co-PI Lisa Ainsworth (USDA ARS) to extend the campus’s enhanced weathering experiments using basalt rock on farm fields.

Other Grants: \$5.3M

iSEE also received several smaller grants, among them:

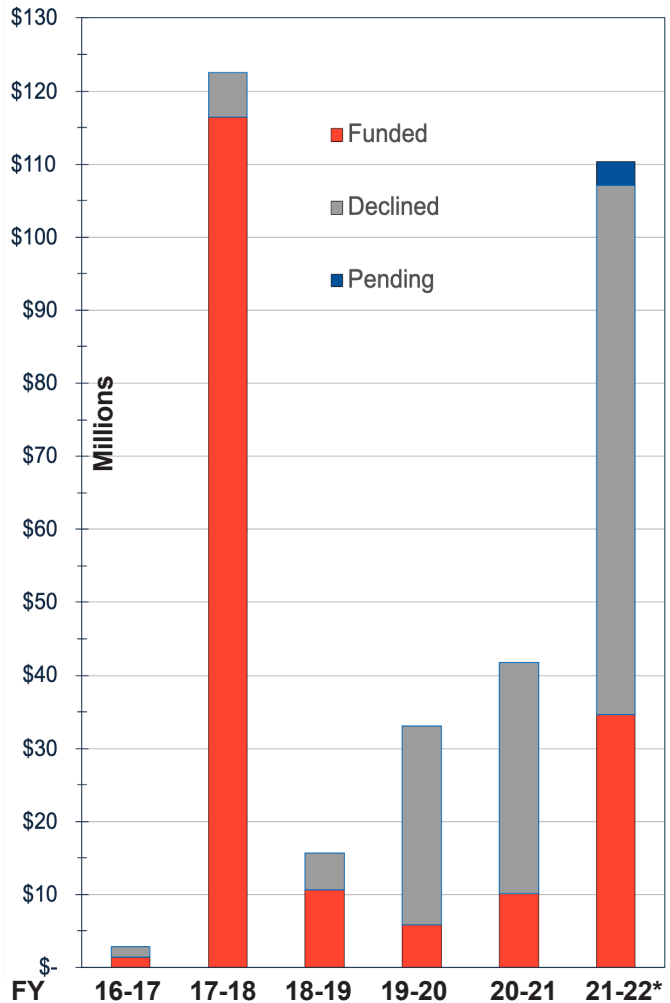
- One of iSEE’s original 2018 Campus as a Living Laboratory projects received nearly \$1M from DOE and the U.S. Army Corps of Engineers in Fall 2021, then another \$1.98M from the DOE Bioenergy Technologies Office (BETO) in Spring 2022. Led by Agricultural & Biological Engineering Professor Yuanhui Zhang, the Environment-Enhancing Food, Energy, and Water Systems project is testing a livestock waste processing system that can deliver renewable energy as well as clean water and some bonus organic ag fertilizers.

- A \$1M, two-year grant in Fall 2021 from the DOE Advanced Research Projects Agency-Energy (ARPA-E) to bolster an iSEE 2020 seed-funded project to turn ash into energy. The Rapid AI-based Dissection of Ashes using Raman and XRF Spectroscopy (RADAR-X) Project, led by Civil & Environmental Engineering (CEE) Assistant Professor Nishant Garg, will develop rapid, real-time analysis of the ashes — then explore numerous composition-dependent end uses.

- Another 2020 iSEE seed-funded project led by Blue Waters and Natural Resources & Environmental Sciences (NRES) Associate Professor Kaiyu Guan to monitor crop nitrogen status was granted \$1M from the Foundation for Food and Agriculture Research (FFAR).

- A \$518,000 subaward for NRES Professor Jeffrey Brawn and CEE Associate Professor Jeremy Guest from the U.S. Geological Survey for the University of Minnesota-led Midwest Climate Adaptation Science Center (CASC) consortium. The

iSEE’s Funding Proposal History, By the Numbers



* Does not include a five-year, \$150M CABBI renewal proposal with the U.S. Department of Energy, a partnership between iSEE, IGB, and 20 partner institutions.

Since its inception in December 2013, iSEE has put forth \$446M in research grant proposals, of which \$231M is pending. Thus far, researchers have been awarded \$179M — which does not include more than \$5M in grants to U of I scientists that were facilitated by iSEE seed grants and other support.

eight partner institutions will advance scientific research and education in response to climate change impacts in the Midwest.

Centers, Major Projects Report Progress

A look at research advances by iSEE-affiliated centers and major projects in FY22.

CABBI

The Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) is in its final year of a five-year, \$115M U.S. Department of Energy (DOE) grant — though a five-year, \$150M extension proposal has been submitted. As of mid-June, the Center now employs about 340 people, including 63 faculty-level researchers nationwide, 158 postdocs and technicians, 92 graduate students, 44 undergraduates, and 13 support staff.

In December 2021, U.S. Secretary of Energy Jennifer Granholm visited CABBI work sites including the Integrated Bioprocessing Research Laboratory and the Illinois Energy Farm (*pictured*). And in March 2022, CABBI Director Andrew Leakey testified before the U.S. House of Representatives Subcommittee on Energy on the bright future of bioenergy and bioproducts.

Other highlights, among several major breakthroughs from each theme:

- Sustainability Theme researchers developed the FUN-BioCROP model to improve representation of soil microbial dynamics.
- Conversion researchers developed a robust, versatile, and fully automated end-to-end platform for plasmid construction named PlasmidMaker that enables scarless construction of virtually any plasmids in a high-throughput manner.
- Feedstock Production researchers continued enhancements in genome editing efficiency in sorghum, sugarcane, and miscanthus.

CABBI researchers disclosed six new inventions in 2021, bringing the total to 26 in 4.5 years.

LC3M

iSEE partners with the Leverhulme Centre for Climate Change (LC3M) at the University of Sheffield to investigate Enhanced Rock Weathering (ERW), a method for removing CO₂ from the atmosphere. Since 2016, crushed basalt rock has been applied to corn, soy, and miscanthus fields at the Energy Farm



to measure the potential of Midwestern croplands to act as sinks for atmospheric carbon, while still supporting the agriculture critical to the region.

The project at the University of Illinois Energy Farm has expanded to include a CO₂ enrichment experiment called “RockFACE” under the guidance of Lisa Ainsworth and the researchers at the SoyFACE site. Eight “MiniFACE” rings have been constructed to compare the effects of basalt with and without CO₂ enrichment mimicking future climate projections for atmospheric CO₂. Responses will show if higher atmospheric CO₂ drives increased CO₂ capture by enhanced weathering.

Team members Carl Bernacchi, Evan DeLucia, Ilsa Kantola, and Stephen Long discussed in February 2022 how the rock dust could boost yields and store vast amounts of carbon in a piece for *Anthropocene* magazine.

And the March 2022 edition of the *BBC World News* series “Follow the Food,” addressed “turning back the climate clock” by addressing the carbon challenge in agriculture. Bernacchi and Ainsworth talked about their work with basalt and the climate change impacts of

higher CO₂, respectively.

ASC/SMARTFARM

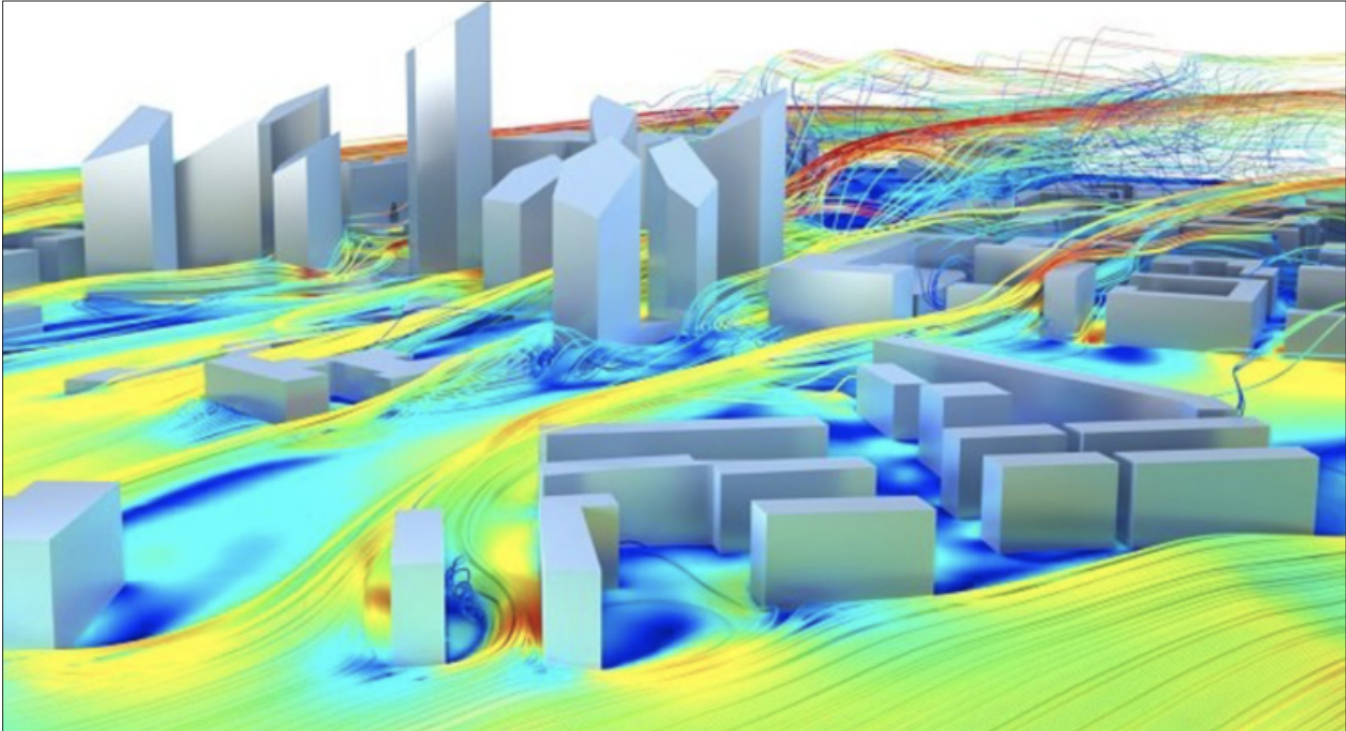
The Agroecosystem Sustainability Center (ASC) is a collaboration between iSEE, the College of Agricultural, Consumer, and Environmental Sciences, and the Office of the Vice Chancellor for Research & Innovation. One of the major ASC thrusts is a SMARTFARM Project funded with two U.S. Department of Energy Grants totaling about \$8M.

In 2021-22, ASC and SMARTFARM researchers, led by Director Kaiyu Guan, an Associate Professor of Natural Resources & Environmental Sciences, published six journal papers, including:

- Putting hyperspectral sensors on planes to quickly and accurately detect nitrogen status and photosynthetic capacity in corn. The results were published in December 2021 in the *Journal of Applied Earth Observation and Geoinformation*.

- Publishing a strategy for estimating soil organic carbon in farm fields — essential for developing sustainable management practices that minimize carbon emissions. The March 2022 paper appeared in *Geoderma*.

RESEARCH



Seed Funds Focus on Urban Sustainability, Environmental Justice

In January 2022, the Institute awarded seed funding for two new research projects — one addressing health disparities in neighborhoods afflicted by hazardous waste, the other developing a sophisticated urban modeling framework to advance global urban sustainability science.

- The project selected for 2022 interdisciplinary seed funding seeks to develop a new urban modeling framework to help scientists understand the interactions between complex urban dynamics and climate change and chart a course toward more sustainable urban environments (*pictured*). The project will be led by Lei Zhao, Assistant Professor of Civil and Environmental Engineering (CEE).

Since the inception of its small seed grant program in

2019, iSEE has funded 14 interdisciplinary projects, four of which have received external grant support (three of them at \$1M or more).

- A new Campus as a Living Laboratory (CALL) seed-funded project addresses health disparities in communities that once housed manufactured gas plants (MPGs), focusing on Champaign’s 5th and Hill neighborhood a few blocks from the U of I campus. This project is led by CEE Assistant Professor Vishal Verma.

Since 2018, iSEE has supported 14 CALL projects, of which three have received significant external grants. The largest was a four-year, \$10M grant for an agrivoltaics study that will include the U of I Solar Farms.

Publications, Published Data, and More ...

iSEE and CABBI researchers published more than 85 scientific journal papers and book chapters between July 2021 and June 2022.

CABBI also published 38 new publicly available datasets during FY22, bringing the total to 100 on the Center’s website, and a webpage describing 10 models used by CABBI researchers in

Feedstock Production, Conversion, and Sustainability.

Beyond the work by Institute-affiliated centers and other major projects, the Crops *in silico* project team was busy:

- In November 2021, *Cis* researchers published “A Hybrid Kinetic and Constraint-Based Model of Leaf Metabolism Allows Predictions of Metabolic Fluxes

in Different Environments” in *The Plant Journal*.

- *Cis* researchers created a modified model to predict soybean growth and productivity as climate change increases atmospheric carbon dioxide levels and affects temperature, precipitation, extreme weather events, and soil factors. The paper was published in December in *in Silico Plants*.

‘Experiential Experiment’ Excels: Cohort Embraces Environmental Leadership Program

iSEE’s first full Environmental Leadership Program (ELP) was a rousing success.

Students were effusive in their praise for the program and the enlightenment and empowerment they received from the ELP. Said Kratika Tandon, it “was easily the most gratifying professional experience I’ve ever had.”

Associate Director for Education & Outreach Luis Rodríguez, Academic Instructor/Advisor Eric Green, and Graduate Student Paul Gharzouzi guided 21 students through a two-day intensive introduction session online in January, followed by eight weeks of in-person working sessions and visits with guest speakers from academia, industry, nonprofits, and government.

The program — supported by a generous donation from the Alvin H. Baum Family Fund — culminated over Spring Break, when students made presentations at the Urbana and Champaign city council meetings and took a two-day trip to Springfield to visit state offices and nongovernmental organizations. Groups of students met with state legislators to advocate for environmental bills under consideration (*pictured*).

The ELP used a careful application review and selection process for students, and the admitted cohort was diverse in terms of backgrounds, disciplines, and class standings. Three ELP participants were first-generation students, and one student identified as transgender.

Plans and budgeting for the 2023 spring ELP experience have already begun, and iSEE is grateful to the following external advisors for their participation and valued advice in creating the program:

- Harriet Hentges, President and CEO of Hentges Associates;
- Eban Goodstein, Director of the Center for Environmental Policy and the MBA in Sustainability at Bard College;



First ELP Cohort: By the Numbers

Cohort breakdown by year and college

Year				College				
Freshman	Sophomore	Junior	Senior	ACES	AHS	Engineering	FAA	LAS
4	5	7	5	12	1	3	1	4

Cohort breakdown by gender and ethnicity

Gender		Ethnicity		
Female	Male	Hispanic or Latinx	Not Hispanic or Latinx	Prefer Not to Answer
13	8	4	15	2

Cohort breakdown by race

Race				
Asian or Asian America	Black or African American	White	White and Black or African American	Prefer Not to Answer
4	1	13	1	2

- Tami Craig Schilling, Agronomy Knowledge Transfer Lead at Bayer Crop Science; and
- Jennifer Walling, Executive Director of the Illinois Environmental Council.

Additionally, we would like to thank the following U of I faculty and staff members: Jeffrey Brawn, Natural

Resources & Environmental Sciences; Sean Fox, Agricultural & Consumer Economics; Esther Ngumbi, Entomology; Daniel Schneider, Urban & Regional Planning; Ashlynn Stillwell, Civil & Environmental Engineering; Christina Swanson, School of Integrative Biology; and Jonathan Tomkin, School of Earth, Society & Environment.

Q Magazine: Environmentalism at Home — and Bigger-Picture

In 2021-22, a record 14 articles appeared over two Volume 4 issues of *Q Magazine*, the flagship student environmental writing publication at Illinois.

In Issue 1, published in October 2021, climate change comes to our backyards as writers from the U of I's Certificate in Environmental Writing and other undergraduate authors tackle environmental and social justice. Miranda Johnson described how the emerald ash borer is driving precious trees to the brink of extinction. Deer are invading the same backyards, and Olivia Grubisich explained how culling, as off-putting as it is to some, might be the only solution to a sustainable coexistence. Nicolas Ramkumar explored the environmental costs of pristine green grass, and the possibilities for suburban sanctuaries that are both beautiful and sustainable.

In March 2022, Issue 2 tackled environmental injustices, agricultural pollution, and the high ecological price of technology. Tyler Swanson, the Janelle Joseph Environmental Writing Contest grand prize winner, exposed the very



real impact of cryptocurrency on our natural environment. And in a travel piece funded by Joseph, Q Student Editor Maria Maring provided a firsthand account of protesting on the frontlines of Line 3, an oil pipeline that breaches Anishinaabe territory in Minnesota.

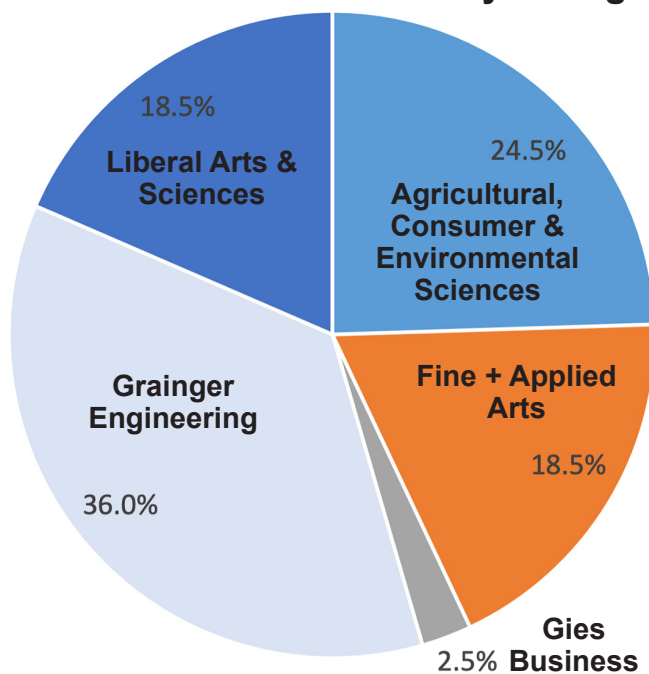
Writing Program Sees Record Enrollment

Gillen Wood, Director of iSEE's Certificate in Environmental Writing (CEW) and *Q Magazine* Editor, reports that the program and its courses have seen increased interest in the past few years — so much so that a record 122 students enrolled in the CEW and its available courses.

The *Q Magazine* editorial board also received (and considered for publication) a record number of student essays — more than two dozen — from their work during courses in the CEW.

The program is a partnership between iSEE, the Department of English, and the School of Earth, Society & Environment.

SEE Fellows Enrollment by College



SEE FP Minor Enrollment Steady; Class Size Grows

The Sustainability, Energy, and Environment Fellows Program (SEE FP), iSEE's campuswide honors minor, continues to have an enrollment of between 70 and 90 students each academic year.

iSEE Instructor/Advisor Eric Green reports that 42 students graduated with the minor during 2021-22.

Additionally, interest in the two required SEE FP classes — ENVS 301 Tools for Sustainability and ENVS 492 SEE Capstone — has created record enrollments in both:

- The Fall 2021 offering, ENVS 492, featured 27 students working on seven projects with corporate and campus partners.
- 53 students enrolled in ENVS 301 for the Spring 2022 semester!

The SEE FP is a partnership with the Schools of Integrative Biology and Earth, Society and Environment as well as the Departments of Agricultural & Consumer Economics, Civil & Environmental Engineering, Natural Resources & Environmental Sciences, and Urban & Regional Planning.

8 Instructors Awarded 2022-23 Fellowships to Incorporate Sustainability in the Classroom

In Spring 2022, iSEE selected eight faculty instructors to be part of the 2022-23 Levenick iSEE Teaching Sustainability Fellows cohort.

Funded by a generous endowment from Illinois Alumnus Stuart L. Levenick and his wife Nancy J. Levenick, this fourth cohort hails from across the University of Illinois Urbana-Champaign campus — and beyond. One of our fellows represents a collaboration with the Zhejiang University International Campus; another will offer a class jointly with the University of Manchester, UK.

All eight Teaching Fellows will incorporate sustainable thinking into existing classes or create entirely new courses built around eco-friendly elements.

“We are excited about the breadth of courses that will emerge from this year’s program,” iSEE Associate Director for Education & Outreach Luis Rodríguez said. “From sustainable concrete in architecture to emerging environmental issues to a look at sustainability trends in Urbana-Champaign, these courses will provide a wealth of knowledge to the students who take them.

“We are grateful to the Levenicks for the generous donation that sustains this program. As part of our educational commitment to the Illinois Climate



ABNEY



BROSS



EMAMI



FLANAGAN



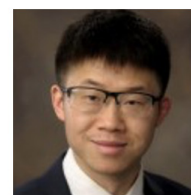
PUNYASENA



TAYLOR



WINTER



YAN

Action Plan, iSEE is striving to incorporate sustainability into as many classes as possible. And with a majority of the Levenick fellows working on 100- and 200-level courses, we are doing our part to reach as many students as possible.”

The 2022-23 awardees:

- Kate Abney, Associate Director of Intercultural and Global Learning in the College of Liberal Arts & Sciences;
- Benjamin A. Bross, Assistant Professor of Architecture;
- Niloufar Emami, Assistant Professor of Architecture;
- Ryan Flanagan, Senior Lecturer of Rhetoric at ZJU-UIUC Institute in

Haining, China;

- Surangi Punyasena, Associate Professor of Plant Biology;
- Mark Taylor, Associate Professor of Architecture;
- Gretchen Winter, Clinical Assistant Professor in Business Administration; and
- Jinhui Yan, Assistant Professor of Civil & Environmental Engineering.

In the first three years, courses taught by 27 Levenick iSEE Teaching Sustainability Fellows have reached upwards of 500 students, and a large number of the courses are now annual entries in the U of I course catalog.

The Reach of the Levenick iSEE Teaching Sustainability Program

In the first four years, 35 instructors were awarded Levenick funding, including eight in 2022 who are in the development stage.

As the popularity has grown, iSEE has put a special emphasis on inviting instructors of 100- and 200-level courses — the idea being to reach a) more students; and b) students at the earlier stages of their college careers so

that sustainability becomes a part of their interests and daily practices. Thus far, nine of 34 courses fit into that category.

The fellows have come from a variety of campus units:

- Agriculture 3
- Architecture 4
- Art + Design 3
- Biology 1
- Business 1
- Education 1

- English, Rhetoric 1
- Engineering 7
- Food & Nutrition 1
- Geology 1
- Global Learning 1
- History, Anthropology 2
- Law 1
- Linguistics, Languages 2
- Medicine 1
- Psychology 1
- Theatre 1
- Urban & Regional Planning 2

‘Circular Food Systems’ Congress Draws 250

iSEE Congress Fall 2021, “Circular Food Systems,” drew more than 250 participants to a series of one-hour Zoom webinars in October and November.

The eighth iSEE Congress returned to the topic of feeding the world: providing a safe, secure supply of food and fuel to an ever-increasing human population using agricultural practices that are ecologically sustainable and adaptable to climate change. Speakers were invited to offer cutting-edge thinking about advancing the sustainability of our agricultural and food systems. The sessions:

- Oct. 19: “21st Century Technologies for Sustainable Agriculture,” featuring Ken Cassman, the Robert B. Daugherty Emeritus Professor of Agronomy at the University of Nebraska; and Girish Chowdhary, Associate Professor of Agricultural and Biological Engineering and Computer Science at Illinois.

- Oct. 27: “Transforming Food Systems for a Circular Economy,” co-sponsored and co-hosted by the Council on Food, Agricultural and Resource Economics (C-FARE) and endorsed by the Agricultural and Applied Economics Association (AAEA) and the American Society of Agricultural and Biological Engineers (ASABE). Speakers included Bruno Basso, MSU Foundation Professor of Crop Modeling and Land Use Sustainability, Michigan State University; James Jones, Distinguished Professor Emeritus of Agricultural Systems Modeling, University of Florida; Charles Rice, Distinguished Professor of Soil Mi-

crobiology, Kansas State University; and David Zilberman, Robinson Chair and Professor of Agricultural and Resource Economics, University of California at Berkeley.

- Nov. 3: “How Can We Reduce Waste from Agricultural and Food Systems?” featuring Brian Roe, Van Buren Professor of Agricultural, Environ-



mental, and Development Economics, Ohio State University; and Tom Theis, Professor of Civil, Materials & Environmental Engineering and Director of the Institute for Environmental Science and Policy, University of Illinois Chicago.

- Nov. 9: “Turning Agricultural Waste into Usable Products,” featuring Thomas Trabold, Research Professor at the Golisano Institute for Sustainability, Rochester Institute of Technology; and Yuanhui Zhang, Founder Professor of Agricultural and Biological Engineering at Illinois.



Critical Conversation Rescheduled for Fall

The COVID-19 omicron variant delayed planning for iSEE in-person events in 2021-22, but the Institute has set **“Climate (In)Securities in Great Lakes Communities: A Critical Conversation”** for Sept. 19-20, 2022, at the University Club in Chicago.

Academics, industry, government, and nongovernment experts, as well as indigenous group representatives, will provide perspectives on issues related to physical, social, economic, and environmental (in)securities in the context of a changing climate in the Great Lakes megaregion.

The event will kick off with an evening public keynote, “Climate (In)Securities in the Great Lakes: Insights from Across the U.S.-Canada Transboundary,” by Pierre Béland, Canadian Chair of the International Joint Commission. A Chatham House conversation for invited participants will follow the next day.

Critical Conversations are supported by the Alvin H. Baum Family Fund. The 2022 event also received generous funding from the Great Lakes Higher Education Consortium, thanks to a grant and ongoing collaboration with the United States Mission in Canada.

Earth Month an Engaging Time for an Enthusiastic Campus

Some highlights from April 2022, in which iSEE partnered with campus departments, Facilities & Services, the Student Sustainability Leadership Council, the Student Sustainability Committee, and Students for Environmental Concerns:

- More than 60 people were part of Urbana native, U of I grad, and Harvard Law Professor Richard Lazarus's return to campus for a MillerComm Lecture on environmental law.
- More than 85 people attended the 2022 Charles David Keeling Lecture by NASA Goddard Institute of Space Studies Director Gavin Schmidt.
- More than 50 attended the "TED Talk: Eco-Edition" hosted by the Illinois Environmental Council's Jennifer Walling.
- Hundreds passed by iSEE's table during Green Quad Day.
- Hundreds more participated in the Earth Week clothing swap as well as iSEE's final two Illini Lights Out events.
- Dozens attended Earth Month



Trivia, the annual Arbor Day Celebration and the new Sustainability Grammys event (*pictured*), which recognized student groups for their contributions to campus sustainability.

- And dozens more participated in the monthlong Water Reduction Challenge.



Celebration, Video, Challenge Highlight Sustainability Month

The Institute's top October 2021 events and programs:

- To help the University of Illinois Urbana-Champaign reach "herd sustainability" — that is, a working knowledge of how to make our campus the most eco-friendly it can be — iSEE published best practices videos for students, faculty, and staff.

Thousands of campus community members watched the videos, learning how to incorporate sustainability into their everyday lives and to support Illinois Climate Action Plan (iCAP) goals in all their actions. The videos highlight the extensive progress campus has made as well as specific steps each individual can take, from recycling to biking to water conservation. They also encourage participation in educational and campus sustainability programming.

- Sustainability Month was capped off with the annual Campus Sustainability Celebration, at which Chancellor Robert J. Jones, iSEE, Facilities & Services, and student groups highlighted campus progress and goals to come. More than 50 people attended the event in person, and dozens more watched the livestream.

- The campus community also took part in iSEE's month-



long Waste Reduction Challenge by cutting the amount of waste sent to the landfill. Dozens of participants filled out weekly grids with a point system to help track waste and any positive actions to reduce it.

- Additionally, iSEE reached hundreds of participants at Green Quad Day hosted by the Student Sustainability Leadership Council, and had dozens of participants in both its monthly Illini Lights Out and "TED Talk: Eco-Edition" events.

CAMPUS SUSTAINABILITY

iSEE Rejuvenates, Expands Programming to Increase Engagement with Campus

In addition to Sustainability Month and Earth Month events, iSEE continues to engage the campus community with other programs that help spread the word about sustainability. Among them:

GREENER CAMPUS

Led by Intern Zoe Huspen, this program certified more than three dozen campus and community events, offices, and Greek chapters in 2022-23.



Seven offices on and off campus won Gold Certification; 28 events were certified, including five hosted by the Chancellor's Office of Special Events (among them commencement)! Alpha Phi sorority, Zeta Psi fraternity, and Alpha Kappa Psi Business Fraternity were the latest chapters to be gold-certified.

To encourage sustainable lab practices, Facilities & Services and iSEE have created a Greener Labs Inventory Toolkit.

ILLINI LIGHTS OUT (ILO)

With a return to in-person events, iSEE re-launched ILO thanks to the efforts of Intern Jenna Schaefer.

In 10 events during the school year, more than 1,400 student volunteers participated, shutting off more than 36,000 bulbs over the weekends and saving campus roughly 63,000 kwh, 44.6 tons of CO₂ equivalent emissions, and \$5,300 in energy bills.



TED TALK: ECO-EDITION

One night each month, iSEE hosts a virtual "TED Talk: Eco-Edition," in which a campus or community member shows a TED Talk on a sustainability topic then facilitates a discussion on Zoom. These events drew more than 450 people between July 2021 and June 2022.



Campus Remains Gold Standard for Sustainability Leadership

In May 2022, the University of Illinois Urbana-Champaign earned its fifth consecutive Gold certification in the Sustainability Tracking, Assessment & Rating System (STARS).

STARS — the nation's most comprehensive sustainability rating system — is a self-reporting framework for colleges and universities to measure sustainability, run by the Association for the Advancement of Sustainability in Higher Education (AASHE). Based on a detailed set of criteria in 18 categories encompassing environmental, social, and economic factors, schools earn points toward one of four ratings: bronze, silver, gold, and platinum.

Illinois has consistently achieved Gold certification since it began reporting data through STARS in 2013, and the 2022 score was one of its highest to date. The U of I is one of 89 schools — and one of six Big Ten Conference institutions — to achieve up-to-date Gold certification in the latest 2.2 version of the STARS rating tool.

Other accolades in 2021-22:

- Finalists in November for the AASHE 2021 Campus Sustainability Achievement Award, thanks to nominations for iSEE's "campus sustainability ambassadors" course, and the completion and launch of the 53-plus-acre Solar Farm 2.0;
- The 2021 International Laboratory Freezer Challenge "winning streak" award for repeating as the top institution in the Academia category for the fourth straight year;
- 25th in the EPA Green Power Partnership On-Site Generation list of businesses and institutions;
- One of 122 campuses nationwide awarded Bee Campus USA status; and
- 51st out of 328 in the Sierra Club "Cool Schools" listings.

New Leaders, Staff Members Join iSEE

Besides Madhu Khanna's ascent from Interim Director to Alvin H. Baum Family Fund Chair and Director, the Institute's leadership team underwent two other notable changes in 2021-22: Luis Rodríguez was named Associate Director for Education & Outreach in August 2021; and Jennifer Fraterrigo took on the role of Associate Director for Campus Sustainability in January 2022.

Fraterrigo, who was promoted in May 2022 to full Professor of Natural Resources & Environmental Sciences, was named to replace Ximing Cai, who served for nearly five years in the campus sustainability leadership role.

Fraterrigo's research expertise is in the effects of environmental change and disturbance on vegetation patterns and ecosystem functioning. A member of the International Association for Landscape Ecology, the Ecological Society of America, and the American Geophysical Union, Fraterrigo is also an iSEE Water Scholar and Global Climate Change Scholar. She holds an M.S. in Ecology from Colorado State University and a Ph.D. in Zoology from the University of Wisconsin.

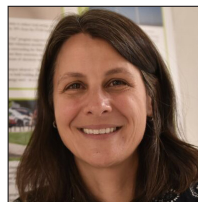
"Jennifer is an outstanding researcher with a passion for environmental sustainability," Khanna said. "She will bring her experience and expertise to provide strategic leadership for our efforts toward achieving Illinois Climate Action Plan (iCAP) goals — including making this campus carbon neutral as soon as possible."

Rodríguez, an Associate Professor of Agricultural & Biological Engineering who has been at the University of Illinois Urbana-Champaign since 2005, assumed leadership of iSEE's educational programs, including the Sustainability, Energy, and Environment Fellows Program (SEE FP, a campus-wide honors minor) and the new undergraduate Environmental Leadership Program (ELP). Additionally, he oversees the Levenick iSEE Teaching Fellows program, which funds faculty from across campus to build new courses in sustainability or to incorporate sustainability elements into existing courses.

Among his outreach duties, Rodríguez will spearhead organization of the annual iSEE Congress and Critical Conversation events and help bring in speakers for annual Earth Month lectures each April. He replaced Gillen D'Arcy Wood, a Professor of Environmental Humanities in the Department of English, is stepping back into a more limited role with the Institute as Director of the Certificate in Environmental Writing Program, a partnership with the English Department and the School of Earth, Society, and Environment.

"We are delighted to bring Luis on board at iSEE," Khanna said. "Luis brings rich experience in developing interdisciplinary educational opportunities for students at the graduate and undergraduate level and in engaging students in experiential learning. Under his leadership we anticipate engaging an increasing number of students and faculty through campus-wide educational offerings."

Rodríguez holds both a B.S. and an M.S. in Bioresource Engineering and Ph.D.s in Industrial and Systems Engineering and Bioresource Engineering from Rutgers University



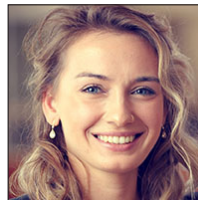
FRATERRIGO



RODRÍGUEZ



MURPHY



LATAWIEC



BERKMAN



GERTH

Managing Director

In January, iSEE announced the hiring of Elizabeth Murphy as its new Managing Director.

Murphy was serving as a Deputy Director of the Center for Advanced Bioenergy and Bioproducts Innovation (CABBI), and she will retain a management position in the Center as well. She replaces Jenny Kokini, who had served since the Institute's inception in 2013. Murphy will oversee iSEE's research project managers, financial managers, proposal developers, communications team, and campus sustainability and educational personnel.

"At CABBI, Elizabeth has efficiently and effectively managed 23 partner institutions, 60 faculty researchers, and 300 personnel," Khanna said. "We know that will translate well to iSEE and its three main missions. I look forward to her skilled leadership in helping us continue to expand our Institute's impact across campus and with partner institutions."

Before her CABBI Project Manager role, which started in 2018, Murphy was a Research Coordinator at the Center. Prior to that, she served 17 years as a Hydrologist at the U.S. Geological Survey in Urbana. Murphy received both a B.S. in Civil Engineering and an M.S. in Environmental Engineering from the U of I.



WENDLING

Staff Additions

Additionally, iSEE made the following hires in 2021-22:

- Basia Latawiec, Research Coordinator, who will lead support efforts for the new USDA-funded SCAPES agrivoltaics project, hired in December.
- Nancy Berkman, Senior Proposal Developer/Financial Specialist, hired in April.
- Sarah Gerth, Proposal Developer/Financial Specialist, hired in May.
- April Wendling, Communications Specialist, hired in November.

INSTITUTE FOR SUSTAINABILITY, ENERGY, AND ENVIRONMENT (iSEE)

Phone: 217-333-4178

Mailing Address: 1101 W. Peabody, Suite 350 (NSRC), MC-635 Urbana, IL 61801

Email: sustainability@illinois.edu

Website: sustainability.illinois.edu

Facebook: facebook.com/iSEEatUofI

Twitter: twitter.com/sustainILLINOIS

YouTube: bit.ly/iSEEyT

Instagram: instagram.com/sustainillinois/

**University of Illinois
Urbana-Champaign**



**Office of the Vice
Chancellor for Research
and Innovation**