



**Institute for Sustainability,
Energy, and Environment (iSEE)**

Annual Report 2023

ACTIONABLE RESEARCH

We shepherd innovative, interdisciplinary, inclusive solutions through collaboration, cutting-edge science, and stakeholder partnerships to help transition society to sustainable energy, agriculture, resource, and infrastructure systems while mitigating and adapting to climate change



EDUCATION & OUTREACH

We offer hands-on learning experiences for the next generation of sustainability leaders, advocates, communicators, and professionals — and outreach that blends research, policy, and advocacy to guide sustainability discussions and develop consensus solutions



CAMPUS SUSTAINABILITY

As a worldwide model for sustainability, we coalesce the aspirations of students, faculty, staff, and leadership to chart a united path to carbon neutrality, zero waste, and climate resilience, and we use campus as a living lab to test innovative, equitable solutions with global applications





External Funding



CLIMATE SOLUTIONS

- iSEE scientists develop new artificial intelligence-enabled tools to catalyze innovation, test new farming practices and biorefinery technologies, and leverage regional partnerships to help the world mitigate and adapt to climate change.
- **Highlight:** Institute for Geospatial Understanding through an Integrative Discovery Environment (I-GUIDE); five years, \$15M, NSF

\$26.5M



ENERGY TRANSITIONS

- Our researchers pioneer transformative bioenergy feedstocks and conversion technologies, solar innovations, and other green energy systems to displace fossil fuels, raise living standards, and reduce environmental impacts.
- **Highlight:** Center for Advanced Bioenergy and Bioproducts Innovation (CABBI); 10 years, \$262.5M, DOE

\$283M



SECURE & SUSTAINABLE AGRICULTURE

- iSEE faculty develop state-of-the-art technologies and climate-smart approaches to improve yields, reduce greenhouse gas emissions and nutrient runoff, and enhance soil health.
- **Highlight:** Illinois Farming and Regenerative Management (I-FARM); three years, \$3.9M, USDA NIFA's "Farm of the Future"

\$45.8M



SUSTAINABLE INFRASTRUCTURE

- Our experts advance electrification and alternative fuels to decarbonize transportation and create green infrastructure solutions to improve ecosystems and public health.
- **Highlight:** iSEE used part of a \$1M lawsuit settlement fund for a \$300k Research Initiative on Sustainable Low-Carbon Alternatives for Meeting Mobility Needs of Urban and Rural Communities

\$6.5M



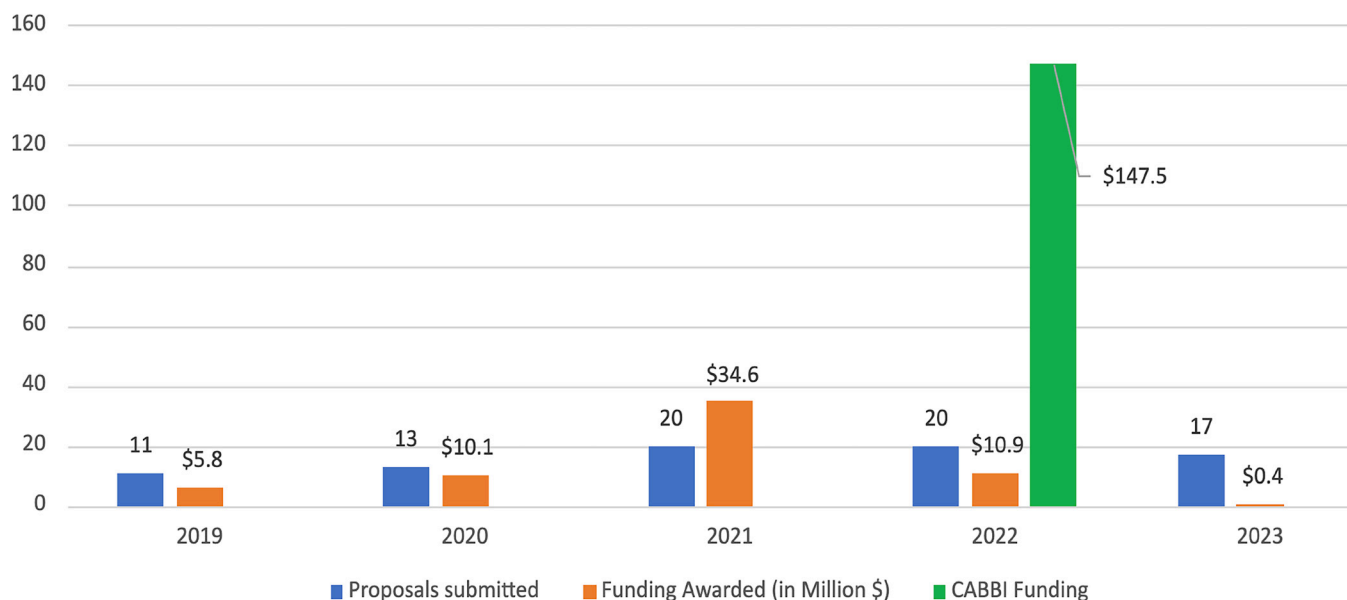
WATER & LAND STEWARDSHIP

- From harnessing vast geospatial datasets to analyzing the effects of land management on ecosystem services, our scholars aim to protect our land and water resources from negative human activities.
- **Highlight:** Agroecosystem Sustainability Center (ASC); several grants totaling more than \$10M

\$4.5M



iSEE Proposal Submittals and Funding Awards, FY2019-23



2022-23 iSEE Proposal Development: Our Business by the Numbers

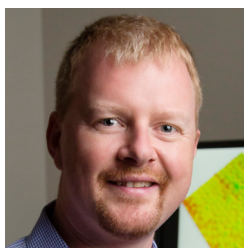
68 Faculty Engaged

18 Departments Engaged

2022-23 Success Stories

CABBI RENEWED!

In March 2023, the U.S. Department of Energy renewed the iSEE- and Carl R. Woese Institute for Genomic Biology-led Center for Advanced Bioenergy and Bioproducts Innovation (CABBI) for five years and \$147.5 million.



CABBI Director Andrew Leakey

“One of the world’s major challenges is to provide sustainable sources of energy that meet societal needs as the population continues to grow,” said Madhu Khanna, iSEE’s Alvin H. Baum Family Fund Chair and Director. “The University of Illinois is uniquely qualified to help lead that challenge along with its 20 partner institutions nationwide.”

Learn more at cabbi.bio.



iCOVER PROJECT FUNDED

In December 2022, the U.S. Department of Agriculture funded a project through its Partnerships for Climate-Smart Commodities program to address major obstacles to cover crop adoption.

iCOVER: Innovated Cover-crop Opportunity, Verification, and Economy stimulating technology for underserved farmers using Robotics, is a four-year, \$4,999,999 initiative led by Girish Chowdhary, Associate Professor of Agricultural & Biological Engineering and Computer Science. The team will scale up robotic cover crop planting and soil

carbon verification with innovative radiological robotic sensing, creating climate-smart product markets for minority underserved farmers.

2022-23 Publications

85+ FY23 Journal Papers by iSEE, CABBI Researchers



2022-23 Success Stories

SEE Fellows Program Grows

The Sustainability, Energy, and Environment Fellows Program (SEE FP), an iSEE-led campuswide honors minor, enrolls 75 to 100 students each academic year. The Fall 2022 SEE FP capstone course featured student groups working with a number of corporate and campus partners, including Busey Bank.



2022-23 Outreach

320
Attendees at iSEE Congress 2023 "Addressing Crises of Planetary Scale: Lessons from Pandemics and Climate Change" on April 12-13, 2023, at the Illini Union

50+
Invited academics, industry leaders, nonprofits, activists, and government and NGO reps who attended iSEE's Critical Conversation, "Climate (In)Securities in Great Lakes Communities," on Sept. 19-20, 2022, in downtown Chicago



ELP Year 2!

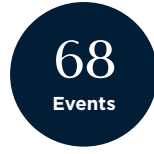
iSEE's extracurricular Environmental Leadership Program (ELP), sponsored by the Alvin H. Baum Fund, helped its second cohort of 25 students learn about policy development, communication, and advocacy. It culminated in visits to local city councils and to Springfield, where students promoted environmental policies to politicians and agencies.

CEW Taking Flight

The iSEE-led Certificate in Environmental Writing Program (CEW) continues to see increased interest in its courses, and CEW students and winners of the annual Janelle Joseph-sponsored writing prize created particularly bird-friendly content for *Q Magazine* in 2022-23. Additionally, recent prize winner Andy Sima (2021) published a middle grades nonfiction book *Climate: Our Changing World* (Albert Whitman & Co.).



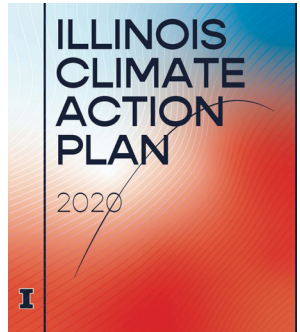
2022-23 Green Certifications



2022-23 Success Stories

Plastic Reduction Campaign Gaining Steam

As the University of Illinois pushes forward on more than 60 Illinois Climate Action Plan objectives, iSEE and Facilities & Services have started a major campaign, partnering with Athletics and Housing to reduce plastic waste on campus with awareness about the benefits of carrying refillable water bottles and good recycling practices. Two Zero Waste events at Illini basketball games saw improved results: On March 2, about 100 volunteers helped collect 1,280+ pounds of beverage containers and other recyclables — a 28% landfill diversion rate. Coming in Fall 2023: A Zero Waste Football Tailgate.



More good news: The U of I earned its seventh straight "Tree Campus Higher Education" and its fourth straight Silver Bicycle Friendly University designation. And it is 29th in the EPA Green Power Partnership College and University category!

2022-23 Illini Lights Out Results

1,450+ Student Volunteers Turning off Lights in Campus Buildings

~73,400 kWh Saved

~47 Metric Tons of GHG Averted

~\$6,477 in Utilities Conserved