BOSTON COLLEGE

SCHILLER INSTITUTE FOR
INTEGRATED SCIENCE AND SOCIETY

ANNUAL REPORT

Academic Year 2024
(June 1, 2023 - May 31, 2024)

245 Beacon Street, Chestnut Hill, MA 02467

BOSTON COLLEGE

SCHILLER INSTITUTE FOR
INTEGRATED SCIENCE AND SOCIETY

TABLE OF CONTENTS

MESSAGE FROM THE EXECUTIVE DIRECTOR

The Schiller Institute for Integrated Science and Society had much to celebrate in academic year 2023-24. With strong student and faculty engagement, a growing portfolio of impactful research, and a multi-faceted international footprint, the Institute made significant strides towards fulfilling our mission. I invite you to review some of our recent initiatives in the summary below and throughout the pages of this annual report.

The Institute will advance Boston College's distinction as ***an international exemplar of boundary-spanning research*** *addressing key societal problems, including climate science and the environment, human health, and the transition to clean energy.*

In their second year at Boston College and the Schiller Institute, our three Core faculty members exemplified our ambitions for the Institute's global reach. **Hanqin Tian**, Institute Professor of Global Sustainability, partnered with the internationally acclaimed Global Carbon Project (GCP) to launch the Center for Earth System Science and Global Sustainability (CES3) at the Institute. The GCP is best known as the go-to source for international measurement of greenhouse gas emissions, and the Center at Boston College will collect, analyze, and manage global nitrous oxides data used by the United Nations and others.

Yi Ming, Institute Professor of Climate Science and Society, worked with Institute staff to host the annual international Cloud Feedback Model Intercomparison Project conference, where 160 researchers from around the world met on the BC campus to share the latest scientific advances on cloud and precipitation modeling, a key component to accurate climate change prediction. **Jier Huang**, the Institute's professor focusing on renewable energy and sustainability, began work on a grant from the Department of Energy to develop a new time-resolved spectroscopic technique that promises breakthroughs in solar fuel synthesis, and positions Professor Huang to exert tremendous scholarly influence on the solar photochemistry community.

The international scope of the Institute was further expanded this year with the hiring of Edson Severnini, who will have a joint appointment in the Economics Department. Professor Severnini's work focuses on the policy and economics of decarbonization, and his international work has recently taken him to Brazil, Mozambique, South Africa, and Finland. Professor Severnini will be joining the Institute in January 2025, after completing the fall semester as a professor at Carnegie Mellon University.

Integrating and expanding BC's existing strengths in the sciences with longstanding research strengths in the humanities, social sciences, and the professional schools, the Institute will offer ***leadership in multi-disciplinary, collaborative research and pedagogy****.*

The Institute supports interdisciplinary research teams through the Schiller Institute Grants for Exploratory Collaborative Scholarship (SI-GECS) and Research in Targeted and Emerging Areas (SI-RITEA) programs. Through these internal seed grant programs, we awarded 15 grants to 30 faculty collaborators for a total of $490,000, all focused on energy, environment, or health. Example projects included "Examining the Impact of Prolonged Droughts and Erratic Rainfall Events on Health and Well-being of Youth in Uganda" and "Developing Aptamers to Create a Platform for Rapid, Multiplexed Sensing of Active Pharmaceutical Ingredients in Water." Over the last three years, Schiller seed grants have supported more than 80 faculty members, trained 150 BC students and postdocs, and provided preliminary data for the submission of 52 external grant proposals.

*The Institute will serve as an **incubator for new interdisciplinary academic programs at BC and extend the scientific understanding** of the nature of interdisciplinarity in the academy.*

This year, Boston College launched the new interdisciplinary major in Global Public Health and the Common Good, an ambitious expansion of the tremendously popular minor. The major is academically administered by the Connell School of Nursing in partnership with the Schiller Institute. The minor and major have combined enrollment of over 175 undergraduate students.

In addition, two programs emerged this year from the cross-campus committee led by the Institute and charged with envisioning the future of data science at Boston College. The new Data Science minor launched in fall 2023 and the new Data Science masters program, administered by the Lynch School of Education and Human Development, will launch in fall 2024.

The Institute continued its interdisciplinary Working For and With Communities course, this year taking undergraduate students to Zanizibar, Tanzania for field research with Professor Caity Bolton of the Lynch School. Students explored a just pathway for island adaptation to climate change and prepared policy briefs on the topic for Tanzania's ministerial government.

Focusing on the science of interdisciplinarity, Institute post-doc Stylanios Syropoulos partnered with Professor Liane Young's Morality Lab in the department of Psychology and Neuroscience to conduct a study that shows that researchers who are awarded funding for interdisciplinary projects identify more strongly with core values of collaboration, curiosity, and intellectual humility than their less interdisciplinary peers.

I encourage you to keep up with the happenings of the Schiller Institute throughout the coming year. Our website is continuously updated with new events, programs, and courses, and we will also be adding new features and sections. For a snapshot of our latest activities and upcoming content, I encourage you to sign up for the SchillerNow newsletter, which is delivered via email twice per semester.

None of this work would be possible without the support of Boston College Trustee Phil Schiller '82 and his wife, Kim Gassett-Schiller. Their multi-year lead gift totaling $25 million brought the Schiller Institute for Integrated Science and Society to life and we are continuously grateful for their support.

I hope that you find this report both illuminating and inspiring, and that it leads you to reflect upon how each of us can grapple with and engage critical issues facing our world.

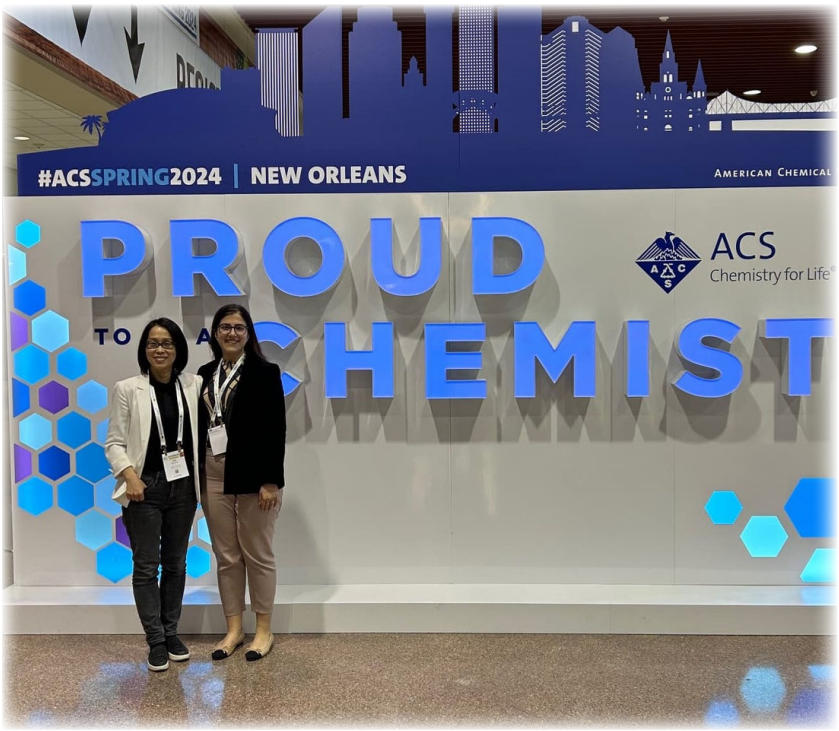
SCHILLER INSTITUTE CORE FACULTY MEMBERS

The Institute's Core faculty are visionary scholar-leaders who are driven by synergistic scholarship across academic disciplines and build integrated teams within the Schiller Institute and across the University. Core faculty members strengthen the research profile of the university; stimulate collaborative, problem-focused research; develop, design, and participate in interdisciplinary curricula and co-curricular activities; build partnerships with leading institutions and organizations; and advance the results of BC applied research into the public sphere.

Jier Huang

Jier Huang is the Institute's professor focusing on renewable energy and sustainability and Associate Professor of Chemistry. Dr. Huang's research focuses on developing cutting edge materials with atomic/molecular precision to address fundamental challenges in sustainable energy and climate change. She is particularly interested in using advanced physical methods to understand how solar energy is captured by the materials, how it travels through the materials, and how it can be directed to perform solar energy conversion.

In the 2023-24 academic year, she published more than 10 peer-reviewed publications and secured a new grant from the Department of Energy (DOE). In this new DOE grant, Dr. Huang, together with two collaborators, Professor Dunwei Wang in Chemistry and Dr. Xiaoyi Zhang (a physicist at Argonne National Laboratory), will develop a new time-resolved spectroscopic technique (namely, multi-pump-multi-probe X-ray absorption spectroscopy) at the advanced photon source, Argonne National Laboratory.



Dr. Huang with graduate student Shahrzad Radpour

With this powerful new tool, they expect to acquire unprecedented details of solar fuel conversion mechanism, the knowledge of which promises breakthroughs in research on solar fuel synthesis; more broadly, this line of research will likely find applications in a wide range of photochemical reactions and exert significant impacts on the solar photochemistry community.

Dr. Huang organized two symposiums in the American Chemical Society (ACS) National Spring and Fall meetings and presented 9 invited seminars in universities and both national and international conferences. She served as Executive Committee Member in the ACS Physical Chemistry Division.

Yi Ming

Yi Ming is the Institute Professor of Climate Science and Society and a Professor of Earth and Environmental Sciences. In the 2023-24 academic year, Professor Yi Ming continued to make significant strides in teaching, research, and service at the Schiller Institute. His natural science core course *Climate Change and Society* remained very popular among undergraduate students. With a maximum enrollment of 160 (dictated by the auditorium's capacity), the course filled up almost instantaneously, with as many as 40-50 students on the waitlist. Professor Ming also co-taught a graduate-level Schiller course titled *Exploring the Climate-Energy-Sustainability-Policy Nexus* with the other Schiller core faculty members. Beyond the classroom, Professor Ming mentored three undergraduate students (with majors in environmental geoscience, biology, and physics), five graduate students, and two postdoctoral researchers.

On the research front, Professor Ming published 8 articles in leading journals such as *Science Advances*, *Nature Communications*, and *Geophysical Research Letters*, exploring topics such as summertime thunderstorms over the U.S. and long-term precipitation trends in East Asia. Motivated by a workshop at Oxford, Ming authored a review article assessing current knowledge gaps in the understanding of Marine Cloud Brightening (MCB) – the deliberate injection of aerosol particles into shallow marine clouds to increase their reflection of solar radiation, with the intent to temporarily offset planetary warming while decarbonization efforts are being pursued. His work was recognized at the Puerto Rico Climate Adaptation Summit, where he delivered a keynote presentation on the latest progress in understanding land precipitation and tropical storms. He also gave an invited seminar at the University of Chicago. Additionally, he secured two more grants, including funding from NOAA, which will support ongoing research projects in the Great Plains low-level jet and extratropical Rossby wave dynamics.

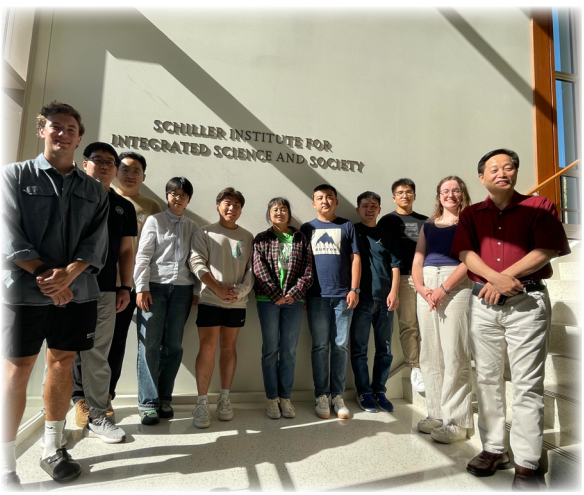
In terms of service, Professor Ming served on the search committee for Schiller core faculty members contributing to important initiatives like health and climate. He also organized an international three-day conference on clouds and climate, Cloud Feedback Model Intercomparison Project (CFMiP), which brought more than 160 scientists from all over the world to BC.

Hanqin Tian

Hanqin Tian is the Institute Professor of Global Sustainability and a Professor in the Earth and Environmental Science Department. His work centers on applying Earth System Science to advance global sustainability, and to guide better decision-making and strategies to preserve our planet's health. Dr. Tian's interdisciplinary research integrates ecology, biogeochemistry, hydrology, economics, Earth system modeling, and data science. He explores various issues, including climate change impacts, mitigation, and adaptation strategies, from local to global scales. His current focus is on predicting and understanding human impacts on global carbon and nitrogen cycles, quantifying greenhouse gas emissions and removals (CO2, CH4, N2O), and exploring nature-based solutions to stabilize the climate while providing essential resources like healthy food, clean energy, water, and air.

In the past academic year (2023-24), Dr. Tian and his team achieved several significant milestones:

- **Center for Earth System Science and Global Sustainability:** Dr. Tian founded the Center for Earth System Science and Global Sustainability (CES3) at the Schiller Institute for Integrated Science and Society and the Global Carbon Project Boston Office.
- **Publications:** Dr. Tian published over 30 peer-reviewed articles in leading journals, including *Nature*, *Nature Climate Change*, and *Nature Communications*.
- **Global Nitrous Oxide Budget Assessment:** Leading an international team of 58 scientists from 55 organizations across 15 countries, Dr. Tian spearheaded the most extensive global assessment of nitrous oxide, resulting in a comprehensive 100-page document published in the leading journal of *Earth System Science Data*.
- **Media and Public Outreach:** Findings from the global nitrous oxide budget were featured in over 600 news articles. Dr. Tian engaged with more than 20 international media outlets and published a widely-read article for the general public, "Food has a Climate Problem: Nitrous Oxide Emissions are Accelerating with Growing Demand for Fertilizer and Meat – But There Are Solutions," which reached 20,000 readers.
- **Coordinating Lead Author:** Dr. Tian was appointed as the Coordinating Lead Author for the Global Nitrous Oxide Assessment Report by the UNEP Climate and Clean Air Coalition (CCAC), a crucial document for international climate policy development.
- **UN FAO Presentation:** Dr. Tian was invited to present and prepare for the Agri-Food Systems Assessment at the UN FAO headquarters in Rome, Italy, from June 26-28, 2024.
- **Recognition:** Dr. Tian was honored as a 2023 Highly Cited Researcher, ranking in the top 1% worldwide for citations across multiple fields, as recognized by Clarivate Web of Science.



RESEARCH

The Schiller Institute is committed to supporting BC faculty, students, and staff conducting interdisciplinary research through grant funding, training, and events aimed at connecting individuals with similar research interests across disciplines, schools, and research methodologies.

Seed Grant Programs: SI-GECS and SI-RITEA

The Schiller Institute **awarded 15 grants, totalling approximately $490,000**, to faculty members across campus. This year marked the third year of the Schiller Institute Grants for Exploratory Collaborative Scholarship (SI-GECS) program, and the first year of the Schiller Institute's grants for Research in Targeted and Emerging Areas (SI-RITEA) program. The SI-GECS program supports collaborative research projects and creative activities in the Institute's principal research focus areas of energy, health, and the environment. The SI-RITEA program supports two programmatic areas: A) grants to support scholarship focusing on the natural environment, health and well-being, or the energy transition as experienced in the Global South; and B) grants to support scholarship focusing on environmental or climate justice, climate resilience, sustainability, health and well-being, or the energy transition. Type B projects include collaboration with a US-based, non-academic partner i.e. a non-governmental organization, business (including smaller start-up companies), or government entity.

The funded projects included ~30 faculty members from five of BC's schools: Carroll School of Management, Connell School of Nursing, Lynch School of Education and Human Development, Morrissey College of Arts and Sciences, and School of Social Work. The lead principal investigators were from Biology, Chemistry, Counseling, Developmental & Educational Psychology (Lynch), Economics, Educational Leadership (Lynch), Engineering, History, Nursing (CSON), Psychology and Neuroscience, Social Work, and Teaching, Curriculum, and Society (Lynch). Further details on the funded projects can be found on the table beginning on the next page.

Schiller Institute grantees funded in the first three years (SI-GECS grantees funded in the 2021-22, 2022-23, and 2023-24 academic years as well as the inaugural cohort of SI-RITEA recipients funded in the 2023-24 academic year) have continued to see a wide array of outcomes thanks to their seed funding. The full results of their work can be found on the Schiller Institute website; some highlights are listed below:

- 174 presentations (includes peer-reviewed presentations, invited presentations, community outreach, and internal presentations)
- 37 papers published
- 52 new grant proposals submitted, totaling $16.9 million
- 31 grant proposals funded, totaling over $7 million
- 150 Boston College undergraduate students, graduate students, and postdoctoral fellows trained
- A youth leadership summit with 12 student participants planned in collaboration with community partners
- Creation of a flexible multicultural mobile-health (mHealth) tool to support refugee families and children that was shared with interdisciplinary mHealth researchers, designers, and developers
- A meeting with US representatives and US senators on Capitol Hill to share BC's work on youth leadership

Summary of SI-GECS grants awarded in AY24

Project Name and Principal Investigators	Project Abstract and Key Outcomes
Leveraging Video-based Social Networking Platforms to Disseminate Research on Energy, the Natural Environment, and Health **Betty Lai (Counseling, Developmental, and Educational Psychology)** **S. Mo Jones-Jang (Communications)**	Scientists are not trained to communicate research findings with the public. This project focused on best practices for science communication via video by conducting a systematic review of the science communication literature and evaluating science-based video content of top creators on video-based social networking platforms. **Key outcomes include:** • Awarded a National Science Foundation grant on science communication. • Manuscript under review for systematic review of the literature. • Trained 8 students across our departments in research skills (across the undergaduate, MA-, and PhD-levels). • Quantitative coding of science communication practices. • Focus group interviews on reactions to science communication practices. • Experimental design development on science communication practices.
The Feasibility and Acceptability of Pre- to Post-Migration Research with Venezuelan Migrant Parents **Christopher Salas-Wright (Social Work)** **María Piñeros-Leaño (Social Work)** **Summer Hawkins (Social Work)** **Along with Postdoctoral Fellow, María Fernanda García**	This project examined the feasibility of conducting research with Venezuelan migrants, including data collection before migration (in Venezuela) and shortly after arrival in the receiving context (in Colombia). Although, to date, only one participant has successfully migrated to Colombia, results suggest that this research design is feasible as the project successfully collected data with participants in Venezuela and re-contacted participants 6 to 9 months later. Myriad factors have delayed participants in emigrating. For many, worrying about elderly parents and other family members was a significant deterrent, but above all, the main reason for staying was not having the funds needed to relocate. Multiple participants have reaffirmed a desire to migrate after President Maduro's contentious reelection to a third six-year term in July 2024. The project team worked closely with international collaborators from Corporación Nuevos Rumbos in Bogotá, Colombia. **Key outcomes include:** • One conference presentation at the annual meeting of the National Hispanic Science Network, led by Boston College's inaugural UNICEF-USA BCSSW Postdoctoral Fellow (Dr. García). • One scientific manuscript in progress. • One NIH grant proposal in progress (NIH R21). • Two graduate students trained. • Key findings communicated to Venezuelan community leaders.
Impact of the Stabilized Criegee Intermediates Chemistry on Tropospheric Formic Acid Distribution **Lucas Bao (Chemistry)** **Yi Ming (Schiller Institute, E&ES)**	Understanding the distribution of formic acid in the troposphere is crucial for addressing environmental issues that impact human activities, such as acidic precipitation and air quality. The project aims to use computer simulations to model the formation, transport, and distribution of formic acids based on fundamental physical and chemical principles. The investigators identified critical chemical reactions and reactive intermediates (Criegee intermediates) as well as explored their energies, structures, and kinetics, which deepened their mechanistic understanding of the chemical origins of formic acids in our atmosphere. **Key outcomes include:** • Three papers were published in peer-reviewed journals (two in the Journal of Chemical Theory and Computation, and one in Advanced Functional Materials). • One graduate student and one undergraduate student were trained in the project. • Two conference presentations (American Chemical Society 2024 Fall meeting, and Emerging Frontiers in Computational Chemistry and Materials). • Planned submission of a research proposal to Climate AI Innovation Grants 2024.

Summary of SI-GECS grants awarded in AY24

Project Name and Principal Investigators	Project Abstract and Key Outcomes
Developing Aptamers to Create a Platform for Rapid, Multiplexed Sensing of Active Pharmaceutical Ingredients (APIs) in Water Michelle Meyer (Biology) Kenneth Burch (Physics) Phil Landrigan (Biology)	Pollution of fresh and coastal waters by pharmaceuticals is a large and growing problem. New analytical tools are needed for rapid detection of pharmaceutical wastes in aqueous media in order to remediate and prevent such pollution. The long-term goal of this project is to develop inexpensive, point-of-need, sensors for common pollutants that can be deployed to pinpoint pollution sources and track changes of pollution over time. This project worked to develop GEMS (Graphene Electronic Multiplexed Sensors) broadly as point-of-need sensors in water and to enable their future application in assessment of active pharmaceutical ingredient (API) concentrations in fresh waterways. **Key outcomes include:** • Increased sensitivity of GEMS for common epidemiological targets via modification of ssDNA aptamer attachment procedure. • Publication of manuscript describing GEMS for epidemiological monitoring in ACS Applied Biological Material. • Developed ssDNA aptamers to the following common APIs: acetaminophen (paracetamol), ibuprofen, metformin, and gabapentin to enable GEMS detection of these compounds. • Training of three undergraduate and two graduate students. • Submission of an R21 grant to the National Institutes of Health. Submission of Water Research Foundation white paper, invitation and submission of full grant. • Established collaboration with Prof. Hoar in Engineering on waste-water monitoring.
Wind Uncertainty and Capacity Planning During the Energy Transition Richard Sweeney (Economics) Yi Ming (Schiller Institute, E&ES)	This project analyzes the historical and anticipated future impact of climate change on wind power production in the United States. Surface wind speeds will be affected by climate change, and the sign and magnitude of these changes will vary across space. To do this we first collected and synthesized historical reanalysis wind speed data for the continental US. We study changes in surface wind speeds due to climate change, and summarize the impact on wind power production. **Key outcomes include:** • Measure historical trends in wind speeds for the continental US since the 1970s. • Combine wind speed estimates with wind turbine production functions to generate changes in wind power potential by region of the electric power grid. • Predict how those trends will evolve over the next century due to climate change using models from the CMIP6 project.

Summary of SI-RITEA grants awarded in AY24

Project Name and Principal Investigators	Project Abstract and Key Outcomes
Ceramic Water Filters for Household Water Purification in Limited-Resource Settings Ali Salifu (Engineering)	This project developed ceramic water filters for water purification at the point of use in limited-resource settings, especially in rural areas in the Global South. The filters were designed from locally available resources like clay, sawdust, and other additives. We focused on using locally available or low-cost resources, such as kaolin clay, in the filter to address potential barriers to implementation as point-of-use household water purification systems in the Global South. We used the science of adhesion to guide the proportion of materials in the filters, which allowed us to make various filter formulations with reproducible water flow rates and high bacteria removal efficiencies. **Key outcomes include:** • Clay-based water filters with reproducible water flow rates developed. • Water filters removed more than 99.99% of bacteria from contaminated water. • 2 undergraduate students trained.

Summary of SI-RITEA grants awarded in AY24

Project Name and Principal Investigators	Project Abstract and Key Outcomes
Promoting Community Climate Resilience and Wellbeing in Northern Kenya through Peace Education **Avneet Hira (Engineering)** **Along with Justin Henriques, Boston College (formerly James Madison University) and Ahmed Mohamed, Garissa University**	This project uses a multidisciplinary peace education approach to co-design and build local capacity for climate resiliency in Northern Kenya in partnership with Garissa University. Garissa County has experienced severe environmental challenges, such as drought, resource conflict, and related shocks to pastoral livelihoods. This project establishes a strategic partnership between Boston College and government, academic, and community stakeholders in Northern Kenya. The project has generated new knowledge grounded in traditional farming and peacekeeping practices, co-design approaches, and sustainable peace. **Key outcomes include:** • Co-design, partnership development, and community mapping kickoff workshop in Garissa town (October 2023), including 26 local county chiefs, government leadership, researchers, and faculty • Community mapping data collection in Balambala sub-county involving 228 respondents • Recommendations for a peace education model for sustainable peace in response to climate-induced shocks to livelihood and resources • Selected as a finalist for Spencer Foundation Research-Practice Partnership grants • Shared work at the Network for Education and Research on Peace and Sustainability (NERPS) Conference 2024 • Co-analysis and framework building workshop in Nairobi (May 2024), including 12 members of the extended research team
Exploring the Effect of Personal Air Pollutant Exposure on Children's Development of Tuberculosis and post-TB lung disease in rural South Africa **Brittney van de Water (Nursing)** **Bryan Ranger (Engineering)** **Phil Landrigan (Biology)**	The project focused on assessing the effects of environmental factors on lung health in South African children with TB. Novel data collection was initiated for this prospective longitudinal study from children 0 to 15 years including from wearable environmental passive air samplers, spirometry, oscillometry, and will be used to correlate key variables with TB treatment outcomes and development of post-TB lung disease. **Key outcomes include:** • Two funded grant proposals (Boston University SPARK award and BU/Brown University CFAR award) • Established key partnership in Nelson Mandela Bay Metropolitan with AQUITY Innovations NGO that will facilitate ongoing clinical data collection from 10 clinics • One undergraduate student, one graduate student, and one research associate trained on the protocol along with the hiring of a study nurse in South Africa • Established and strengthened collaborations with Boston College colleagues along with faculty from Boston University School of Public Health, Yale School of Public Health, and AQUITY Innovations. • Development of REDCap database with 14 tools to be used at 3 timepoints for data collection
Children's Third-Party Intervention Across Urban and Rural Contexts in the Global South **Katie McAuliffe (Psychology and Neuroscience)**	This project focused on social development in children in urban and rural communities in India. The project conducted studies addressing two important aspects of children's developing social cognition: (1) to what extent do children integrate information about the choices others had when making decisions in their evaluations of others' actions and character and (2) to what extent are children willing to intervene against wrongdoing as third parties. The project team was interested in examining whether children's responses show variation across more urban and more rural sites. **Key outcomes include:** • Collected data with a large sample of children • Developed fruitful partnership with our NGO facilitators in India (Mystery of Mothers) • Provided training opportunities to early-career scholars • Trained five undergraduates from Boston College as well as undergraduates from other schools who participated in the project's NSF REU program • Three publications in progress • One conference presentation and one pending conference presentation. Three talks at other universities (Harvard, MIT, and Brown).

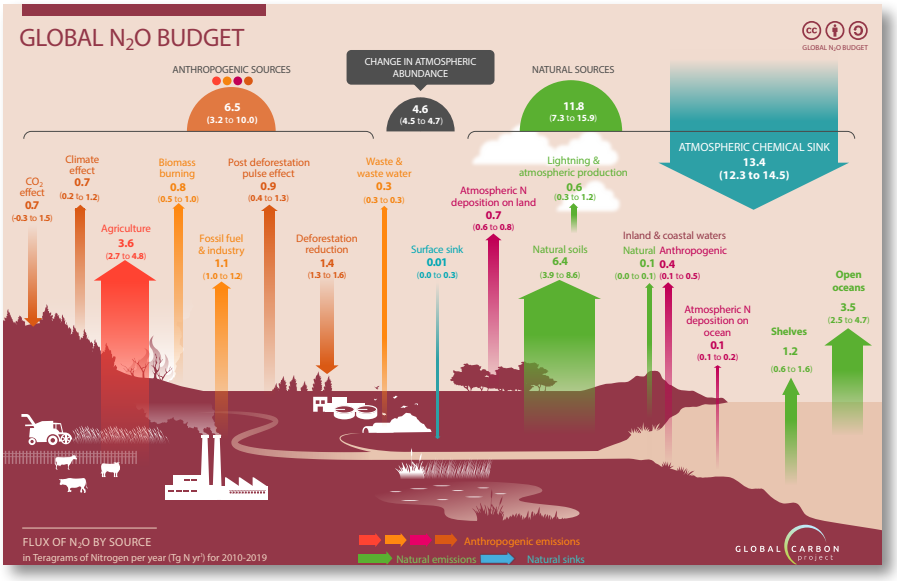
Summary of SI-RITEA grants awarded in AY24

Project Name and Principal Investigators	Project Abstract and Key Outcomes
Understanding Just Transition in Bangladesh: Does Shift to Improved Brick Kilns lead to Well-being of Brick Workers? **Praveen Kumar** **(School of Social Work)**	This study investigates how the 'green transition' of brick production in Dhaka impacts low-income workers. The project explores the degree to which this green shift can be characterized as a just transition. Specifically, the project compares the working conditions and well-being of workers employed at kilns with traditional versus improved kiln technologies. The project identified promising & concerning patterns highlighting mixed success of a just transition. The results demonstrate that workers at improved technology kilns fare better than their counterparts at traditional kilns across multiple dimensions of work standards. The majority of these brick workers are migrants, who are displaced from rural interiors due to climate-led sea-level rise and reduced agricultural productivity. **Key outcomes include:** • First systematic assessment of brick laborers' well-being in the context of a 'green shift' in brick manufacturing industry in Bangladesh • Laid foundation for future work to more broadly assess working conditions amongst brick workers in Bangladesh, and the pathways of climate-led displacement in Bangladesh • Established working partnership with ARCED foundation for future work in Bangladesh • Supported dissertation work of doctoral candidate in BCSSW
Examining the Impact of Prolonged Droughts and Erratic Rainfall Events on the Health and Well-being of Youths (15-24 years) in Uganda **William Byansi** **(Global Practice)** **Praveen Kumar** **(Social Work)**	Our project aimed to explore the impact of climate change—particularly droughts and erratic rainfall—on the mental health and well-being of youths aged 15-24 years in Uganda's Wakiso and Hoima districts. We investigated how these environmental challenges contribute to anxiety, depression, and stress, and how community resilience and support can mitigate these effects. The study combined qualitative interviews, surveys, and climate data to develop a comprehensive understanding of the climate-mental health nexus. **Key outcomes include:** • Surveyed 941 participants (422 males and 519 females) to assess mental health outcomes, including depression, anxiety, PTSD, and substance use, in relation to environmental stressors. • Engaged One Master's student in project management tasks such as IRB preparation, literature review, and monthly calls with local partners in Uganda. One undergraduate will help with data analysis and visualization in the fall. • 3 presentations were made at Boston College, and Uganda organized a stakeholder engagement • meeting. • Submitted two grants, including a planning grant to the Burroughs Wellcome Fund and an R21/R33 to NIH. • Began preparing 2 manuscripts for publication in public health and social work journals.
Environmental History of the Lower Neponset River **Conevery Bolton Valencius** **(History)**	The Neponset River History project enables people along the lower Neponset River to understand the 'what' and 'why' behind current places along the river. An ArcGIS sitemap to be launched Fall 2024 on the NepRWA website allows users to click locations on a map of locations visible from the Neponset River Greenway to discover capsule histories of sights such as pilings sticking up out of the water or fences lining the riverway. Schiller Institute funding has supported this project in conjunction with UMass Boston's Institute for New England Native American Studies and the Neponset River Watershed Association. **Key outcomes include:** • Publicly-accessible website to promote community engagement with a formerly industrialized river of key importance to New England's economy and history. • Relationships between Boston College and a local non-profit and a community-oriented • program of a nearby state university. • Professional experience and mentoring for two Boston College undergraduates and two History PhD students. • Creation of the Neponset River Lab, an innovative collaborative workspace in the History Department.

Summary of SI-RITEA grants awarded in AY24

Project Name and Principal Investigators	Project Abstract and Key Outcomes
Partnering with Boston Public Schools to Inspire the Next Generation of Geoscientists Through the Stories of the Earth **Ethan Baxter (Earth and Environmental Sciences)** **Kate McNeill (Education)**	This project developed, disseminated, and evaluated nine new episodes of "Every Rock Has A Story" comprising Season Four of this YouTube series for children. A new partnership was launched with the Boston Public Schools wherein 4th and 5th grade classes incorporated Season Four into their lessons. Surveys and focus groups were designed to assess the effectiveness of Every Rock Has A Story in developing students' fascination, value, and sense of belonging in the geosciences. **Key outcomes include:** • Nine new episodes (#74-82) filmed with diverse co-hosts on site in England, Georgia, Texas, Maine, New York, Sweden, and at Boston College. • Nominated for a New England Regional EMMY Award in the Children/Youth category. • Over 200 Boston Public School students watched all nine episodes in their classes; subsets of these same students and their teachers completed assessment surveys and focus groups • MSELA Invited presentation, NSTA Science Update webinar, NSTA National Conference presentations • Live presentations at nine local schools and one museum to over 2100 K-6 students • Grant submitted to the US Army Corps of Engineers to continue the project (pending)
A Strategic Partnership: Creating a Collaboratory for Environmental Science **Mike Barnett (Teaching, Curriculum, and Society)** **Avneet Hira (Engineering)** **Partnered with the Charles River Museum of Industry and Innovation (CMRII) to create the Charles River Collaboratory**	The Charles River Collaboratory is Massachusetts' first youth-led, equity-focused, justice-centered maker space where youth voices guide the work of the Collaboratory. Over the course of the year the youth have been learning the foundational principles of a range of coding, physical computing, and building technologies such as Computer Numerical Control and laser cutting that will be used to run community workshops that will be launching this Fall and through 2025. Throughout the year more experienced youth served as mentors to their younger peers where they served as not just teachers but role models. The project team finds that near-peer mentoring is critical to improving and re-engaging youth in STEM who have opted out of STEM. They have also found that the act of mentoring is central to youth's sense of belonging and identity toward STEM fields. The team finds that it takes two to three years before their self-efficacy and identity toward STEM starts to shift in a way where they believe that they can be successful in STEM, showing the importance of long-term engagement with youth. **Key outcomes include:** • 110 distinct youth participated in programming over the course of the project • The youth learned how to code using physical computing, air quality sensors, Carbon Dioxide Sensors, how to data log, and how to stream that data to the web and to analyze the data • Two publications (1 journal and 1 book chapter) • Five conference presentations • Three successful grant proposals, with four additional proposals pending.
Addressing Social issues Through Cross-sector Partnership: Co-Designing a Youth Leadership Initiative with the Chelsea Children's Cabinet **Rebecca Lowenhaupt (Educational Leadership)** **Betty Lai (Counseling, Developmental, and Educational Psychology)**	This SI-RITEA Type B project builds on the ongoing research-practice partnership with Chelsea Public Schools to co-design, facilitate, and study the Chelsea Children's Cabinet, a cross-sector initiative bringing together education, local government, and youth-serving organizations in the city to address concerns about youth wellbeing and mental health in the aftermath of the COVID-19 pandemic. In this phase of the project, the partnership expanded to uplift youth as leaders within the community to inform the work of the Chelsea Children's Cabinet. A Youth Leadership Initiative (YLI) with high-school students was designed with project partners to facilitate their engagement with institutional and community leaders. In the second year of the grant, engagement will continue with youth and the Chelsea Children's Cabinet in ongoing partnership building on this work. **Key outcomes include:** • Hosting 22 students over two summers (July 2023 and 2024) on BC's campus for the Youth Leadership Institute. • Ongoing design, facilitation and documentation of monthly Children's Cabinet meetings • Completing 3 full years of a successful research-practice partnership with ongoing commitments from district and university partners to continue the work • National and international conference presentations, e.g. presentations with community • partners at the American Educational Research Association, • 3 journal articles published or in press, 1 under review, and 2 currently in process • 1 external grant from the W.T. Grant Foundation • Training an interdisciplinary team of 3 undergraduate, 2 graduate and 2 post-doctoral scholars

Center For Earth System Science and Global Sustainability (CES3)



In November 2023, the Institute launched the Center for Earth System Science and Global Sustainability (CES3). Institute Professor of Global Sustainability Hanqin Tian serves as the inaugural director for CES3. The Center works in partnership with the Global Carbon Project (GCP), which analyzes the impact of human activity on greenhouse gas emissions and Earth system, producing global budgets for the three dominant greenhouse gasses—carbon dioxide, methane, and nitrous oxide. CES3, under Dr. Tian's direction, leads GCP's efforts related to the nitrous oxide (N2O) budget. The Center provides a platform to organize faculty across the BC campus and around the world to conduct research in the fast-growing and emergent fields of interdisciplinary research in carbon neutrality/Net Zero and climate solutions, as well as the nitrogen nexus with climate, food, energy, water security, and human health. The Center promotes international collaboration by partnering with the Global Carbon Project, the UN Food and Agriculture Organization, and others. The charge of the Center is closely aligned with the Schiller Institute's mission; in order to achieve net zero emissions, the Center will use an interdisciplinary approach that integrates knowledge across the physical, ecological, and human systems.

The Institute hosted a kick-off event for the Center, which included a keynote speech by GCP Executive Director Josep (Pep) Canadell. Dr. Tian also spoke during the event, noting that he

> **"expects CES3 to play a pivotal role in global efforts to tackle climate change and address sustainability challenges. Our primary goal is to fill critical knowledge gaps in understanding the interconnectedness of the Earth and human systems within the climate-food-energy-water-health nexus."**

Susan Pan, Tony Wang, Yi Ming, Hanqin Tian, Pep Canadell, Laura J. Steinberg, David Quigley, Jier Huang, and Ethan Baxter at the CES3 kick-off event

A few months after CES3 launched, the Center published a seminal report on the global N2O budget. Dr. Tian co-led the study, completed by nearly 60 researchers around the world. The report found that emissions of nitrous oxide are entering into the atmosphere at a faster rate than at any other time in history. N2O is a greenhouse gas more potent than carbon dioxide or methane and excess nitrogen contributes to soil, water, and air pollution. More about the report can be found here.

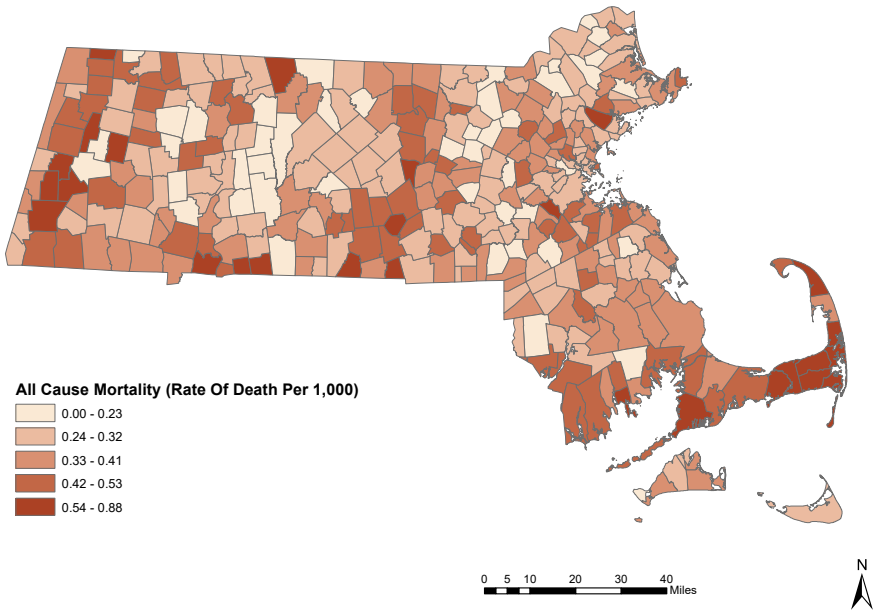
Global Observatory on Planetary Health

The Global Observatory on Planetary Health is a research center within the Schiller Institute under the direction of Dr. Philip J. Landrigan. The Observatory's work is supported by the UN Environment Programme (UNEP), the Minderoo Foundation, the Centre Scientifique de Monaco, the World Resources Institute, the Barr Foundation, the Owsley Brown II Family Foundation, and the A-Team Foundation.

A recent project of the Global Observatory on Planetary Health **quantified the health effects of air pollution in each city and town in Massachusetts**. The Observatory's study found that 670,000 tons of air pollutants are released in Massachusetts each year, with motor vehicles the largest source. In adults, this pollution is responsible for an estimated 2,800 deaths annually from cardiovascular disease, 2,200 deaths from lung cancer, 200 deaths from stroke, and 343 deaths from respiratory disease. In children, air pollution is responsible each year for 300 low-weight babies, 15,000 asthma cases, and the loss of nearly 2 million IQ points. These impacts are most severe in low-income, minority communities, but air pollution causes disease, disability and premature death in every city and town in Massachusetts regardless of location, demographics, or median family income. This work was supported by the Barr Foundation.

Ambient air pollution is the world's largest environmental cause of morbidity and mortality. Fossil fuel combustion is the major source, and air pollution is closely linked to climate change. In adults, air pollution increases risk for cardiovascular disease, stroke, chronic obstructive pulmonary disorder, lung cancer and diabetes. In infants and children, air pollution increases risk for premature birth, low birthweight, stillbirth, asthma, and impaired lung development. Emerging evidence indicates that air pollution is associated with neurobehavioral dysfunction – increased risk of dementia in adults and increased risk for autism and loss of cognitive function (IQ loss) in children.

All-Cause Mortality (Deaths per 1,000) Attributable to PM. Air Pollution by City and Town, Massachusetts, 2019



Cloud Feedback Model Intercomparison Project (CFMiP) Annual Conference

Through the leadership of Institute Professor of Climate Science and Society Yi Ming, Boston College hosted this year's annual Cloud Feedback Model Intercomparison Project (CFMiP) Conference. The conference was in early June and primarily took place in 245 Beacon Street, the home of the Schiller Institute. CFMiP is the world's leading conference on understanding cloud feedback, a key variable in climate change predictions.

Dr. Ming described the importance of clouds in climate science when talking about the conference.

"The goal is to better understand the roles of clouds in climate science in general. Clouds reflect sunlight back to space – the more clouds, the less heat and radiation gets to the ground and vice versa. Cloud cover will be affected by climate change as weather patterns change, which will in turn affect climate as more or less sunlight reaches the ground. But how many clouds there will be in the sky in the future is a tricky thing to predict. At any given time, one third of the earth's surface is covered by clouds. As you change the climate, clouds will change along the way, too. That's what we call cloud feedback. If you look at the source of uncertainty in the future climate model projection, cloud feedback is simply the biggest."

Approximately 160 people attended the conference, with attendees representing a variety of organizations, such as NASA, DOE, NOAA, and the European Space Agency, and traveling from all over the world, including Japan, Australia, Canada, South Korea, India, and multiple countries in Europe.

Papers and Presentations by Schiller Institute Staff

During this year's American Educational Research Association annual conference, Stylianos Syropoulos presented a new Schiller Institute study that shows researchers who have been awarded funding for interdisciplinary projects identify more strongly with core values of collaboration, curiosity, and intellectual humility than their less interdisciplinary peers. These modes of thinking are considered vital for advancing research in a growing number of fields and suggest increased interdisciplinary funding would be beneficial across the board.

Dr. Syropoulos is a Postdoctoral Research Fellow at the Schiller Institute and the Department of Psychology and Neuroscience at Boston College. The project was funded by a grant from the John Templeton Foundation. Syropoulos found that with intellectual humility, researchers acknowledge that they may have blind spots or knowledge gaps even within their areas of expertise. It opens the door to collaboration and curiosity, allowing researchers to find partners who can help fill those gaps. Schiller Executive Director Laura J. Steinberg is one of the principal investigators on the project as well and noted that universities should seek to cultivate an environment which financially and culturally supports such collaborations to promote interdisciplinarity.

New Research Space

The research teams of Schiller Core faculty members Hanqin Tian and Yi Ming moved into a new computational laboratory in the Service Building, following extensive renovations to the building. Employing state-of-the-art design and equipment, the space is the primary workspace for postdoctoral fellows, graduate students, and undergraduate students working with professors Tian and Ming. In addition to ample desk space for large monitors, the space also includes a collaboration area for group meetings to share and discuss results, as well as two small conference rooms.

ACADEMIC PROGRAMS

To prepare the next generation of scholars, advocates, and leaders, the Schiller Institute's academic programs and courses offer BC students many opportunities to develop a disciplinary-spanning intellect and 21st century skills.

Working For and With Communities: Community Engaged and Project Based Learning for the Common Good (Zanzibar, Tanzania)

In spring and summer 2024, the Schiller Institute offered the second year of our two-course sequence, Working For and With Communities, which featured weekly course meetings each Friday throughout the spring semester and a three-week immersive experience in Zanzibar, Tanzania over the summer. The students were led by Assistant Professor of the Anthropology of Formative Education Dr. Caity Bolton, and Assistant Director, Programs for the Schiller Institute, Kaley McCarty. The group was composed of seven undergraduate students, with majors in Environmental Studies, Formative Education, Film, International Studies, Finance, and Applied Psychology. The Institute established an MOU with the State University of Zanzibar (SUZA) and collaborated with two of their faculty members, Dr. Mary Khatib and Dr. Issa Ziddy.

In spring, students were presented with a project prompt describing the context and the questions they'd be exploring; an excerpt of which is included below:

> This project invites students to conduct ethnographic research on human-environment relationships in Zanzibar, with the purpose of illuminating a just pathway forward in a setting beset by rapid natural and social change, competing national priorities, and inequalities in who bears the burdens of climate change. Students will conduct interviews and observations with rural fishermen, seaweed farmers, tour ist operators, tourists, and other Zanzibari community members on gender, religion, and responsible tourism in light of the needs for climate change mitigation and adaptation.
>
> The goal is to produce, after close cultural engagement and ethnographic interviews/observations, a policy presentation answering the question: What do we need to know about how gender, religion, and tourism interact with and affect climate change adaptation in order to better support policy and action frameworks in Zanzibar?

During the first week of the trip, the group was based in Zanzibar Town where they met with Dr. Zakaria of Tanzania's Blue Economy Ministry and ZAFIRI (Zanzibar Fisheries and Marine Resources Research Institute), Vice Chancellor Moh'd Makame Haji of SUZA, SUZA faculty and their students, and representatives from two community-focused Zanzibari NGOs: Milele and Mwambao. These meetings helped the group build relationships and learn about the current state of economy, environment, and relationships between stakeholders. Dr. Zakaria explained challenges the Ministry has faced in its goal of sustainable development and how the group could potentially help the Ministry gain insights into relationships between stakeholders as well as the community's perspective on environmental and economic changes on the island.

During the second and third weeks, the group was based in Paje, a small village on the eastern coast of Zanzibar. Through ethnographic observation and interviews, themes emerged about which topics were most salient, namely, how local Zanzibaris could benefit from increased tourism and responsibly engage in coastal livelihoods, and communication challenges between stakeholder groups. Furahia, an all women's seaweed farming cooperative located in Paje, taught the group about their farming and production processes. At the request of the cooperative, the students created a series of posters with information in English about the women, their cooperative, and seaweed farming to post so that tourists would understand their work and who they are.

Before departing the island, the group met with Dr. Zakaria to present initial findings. In fall 2024, the students will virtually present their policy recommendations to Dr. Zakaria and representatives of the Blue Economy Ministry, and receive feedback that will help inform the projects' next steps.

Starting from the top right, pictured are students with Dr. Mary Khatib learning how local farmers dry seaweed before it is processed, a local farmer bringing seaweed from the farms in the ocean to the cooperative in the village, local farmers sharing their excitement about new water shoes provided by the Schiller Institute, and the group of students and faculty after their meeting with the Blue Economy Ministry.

The Program for Global Public Health and the Common Good (GPH&CG)

The Program for Global Public Health and the Common Good is directed by Professor Philip J. Landrigan. This year, we welcomed Boston College School of Social Work Associate Professor Summer Sherburne Hawkins as the program's inaugural Associate Director. This year also saw the program achieve a long-planned milestone: launching the major in Global Public Health and the Common Good. Like the minor that the Program has offered for several years, the BA is academically administered by the Connell School of Nursing in partnership with the Schiller Institute.

The Global Public Health and Common Good major and minor both require that students apply to join the program. In spring 2024, the program accepted 53 new minor students and the second cohort of 17 new major students. The program received strong interest; there were twice as many minor applicants and three times as many major applicants as available spaces. As of June 2024, there were 145 students actively enrolled in the minor and 202 have graduated since May 2020. Discussions are underway with Tufts University to create an Accelerated Pathway to a Master of Public Health (MPH) degree to be launched next academic year.

Additionally, the program's faculty continues to grow. Dr. Katelyn Sileo was hired as an Associate Professor in the Connell School of Nursing this past academic year. Professor Sileo is an epidemiologist joining us from the University of Texas at San Antonio. Professor Sileo is a gifted teacher, and she conducts research in Uganda where she develops and implements strategies to improve health outcomes in patients infected with HIV. More information about the program can be found on the GPH&CG website.

Global Public Health and the Common Good students at the 2024 Hamilton Symposium

Additional Courses

The Schiller Institute offered the following additional courses this academic year, all using the SCHI course code.

Entrepreneurial Leadership in Energy, Environment and Health (SCHI3030) is a one-credit professional development course featuring meetings with leaders of entrepreneurial organizations who represent the Schiller Institute's mission to serve the common good, focusing on our three core areas: energy, environment, and health. This course offered opportunities for students in any Boston College major to develop an understanding of entrepreneurship, and skills in communication, business, and networking while having unique opportunities to connect with leaders and innovators working on the cutting-edge of the Institute's three core areas. The course was taught by Laura J. Steinberg, Seidner Family Executive Director of the Schiller Institute, and will be offered again in Fall 2024.

The Ethics of Sustainability and the Future of the Common Good (SCHI3200) is a course that explores the ethical, political, and social issues related to creating a more sustainable world in light of the challenges posed by our changing planet. In particular, the course looked at questions raised about our obligations to design more sustainable social, political, and economic institutions that ensure a better future for humanity as well as the other inhabitants of Earth. As a fundamentally interdisciplinary course, it drew on insights from across philosophy, psychology, and sociology to better understand the challenges and potential solutions for managing energy economies, global health, and the environment more broadly. The subject matter was both academic and practical: the hope is that by better understanding the ethical stakes of the sustainability challenges we face, we might also become more savvy and responsible consumers, citizens, and stewards of our planet. The course was taught by professors Jeremy Evans and Michael Smith of the Carroll School of Management.

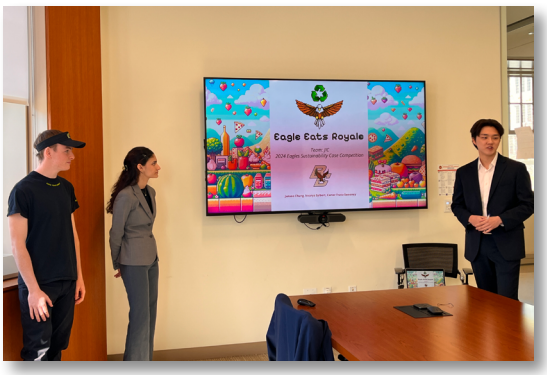
Forging Just, Effective Climate Policy in the UN COP Process (SCHI5010) is part of the Institute's leadership role in sending BC's delegation to the United Nations Conference of the Parties (COP). The one-credit fall semester course provided an academic overview of COP from historical, political, and social perspectives. The course is required for student members of BC's official delegation traveling to the Conference of the Parties of the UNFCCC, and open to other interested students through departmental permission. The course was facilitated by School of Social Work Associate Professor Praveen Kumar and School of Social Work Assistant Professor María Fernanda Piñeros-Leaño. It included guest lectures from experts on global public health, the history and political science of climate negotiations, youth activism, and environmental justice. The students also had a special briefing from Catherine Goldberg ('16), Senior Climate Policy Officer, U.S. Department of State. The Institute's role in the COP delegation is discussed further later in this report (page 26).

Exploring the Climate-Energy-Sustainability-Policy Nexus (SCHI5020) was co-taught by the Institute's three Core faculty. This interdisciplinary course focused on the intersection of climate science, renewable energy, sustainable growth, and policy-making. It provided students with a comprehensive, yet in-depth overview of the complex interrelationships between these four key areas and how they may interact to shape the future of our planet. By the end of the course, students gained a deeper understanding of the complex interplays between climate, energy, sustainability, and policy, and were able to think creatively about different technological and policy solutions to the most pressing problems in these areas such as net-zero transition and climate justice. They also developed skills in critical analysis and communication, which will be useful in a variety of fields related to the grand challenge of mitigating and adapting to climate change.

STUDENT ENGAGEMENT

Eagles Sustainability Competition

The Eagles Sustainability Competition challenges teams of 2-3 undergraduate students to propose solutions to a sustainability-related issue on BC's campus. The competition is a collaborative effort between the Schiller Institute, Carroll School of Management, and Undergraduate Government Boston College (UGBC). Each year, the competition partners with a department on campus to develop the prompt that the student teams then address. This year's campus partner was BC Dining and the challenge to teams was to come up with creative solutions to address food waste on campus. BC Dining served as an ideal partner for the competition because of their existing focus on sustainability and demonstrated commitment to seeking feedback from students.



Three teams were awarded prizes based on their ideas. First place was JIC, which was composed of Junsoo Chung (double majoring in Economics and Computer Science), Isyarya Sylbert (Environmental Science and Biology), and Carter Frato-Sweeney (Applied Psychology). JIC proposed the creation of an app called Eagle Eats Royale to teach students about composting and recycling. Through the app, students would earn points for their food-related sustainable behaviors, which could be translated to prizes, such as tickets to BC sporting events.

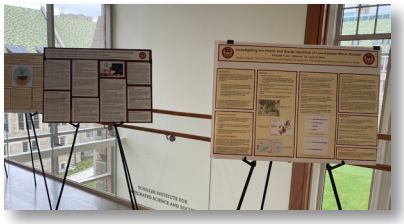
Second place was Shawstainability, which included Michael Tran (Undecided, CSOM), Xander Widener (Political Science), and Ashna Potluri (Finance). Their proposal was for an AI-powered data collection system to track the types of food students throw away and inform Dining's decisions regarding menu items and portion sizes. In their proposal, cameras would be installed above compost and trash bins in dining halls. The images gathered would be fed into a machine learning-powered system that analyzes which aspects of which dishes are being trashed the most.

The third-place team was Braemore Consulting Group, made up of Dylan Kim (Computer Science), Oliver Hazard (Finance and Entrepreneurship), and Sanghyeok Park (Computer Science and Accounting). Their idea included the use of a composting-to-fertilizer-to-greenhouse system that would introduce the idea of a circular food economy to BC Dining. Their plan would have Boston College partner with Ecotone Renewables, a company co-founded by Elliott Bennett, BC class of '21. Ecotone makes a large-scale composter that directly turns food waste into carbon negative fertilizer.

Recordings of the top three teams can be found on the Institute's YouTube page.

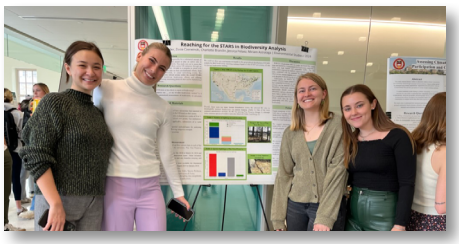
Co-sponsored Events

The Institute co-sponsored multiple events organized by and/or for the benefit of students during the year, including:



CARE course final presentations. In partnership with the Thea Bowman AHANA and Intercultural Center, Schiller co-sponsored the Community Advocacy and Research Engagement (CARE) course. The sponsorship included providing funding to the students in the course, to support research expenses. In addition, the final presentations for the course were held in the Schiller Institute Convening Space.

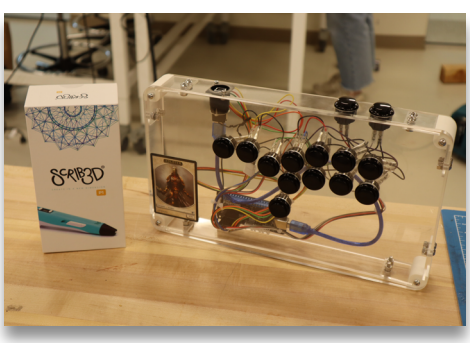
Career in Environmental Engineering, Construction, or Real Estate Information Session. With the Corcoran Center for Real Estate and Urban Action, the Institute co-sponsored an informational session lunch with Elizabeth Allen from Consigli Construction Co. Elizabeth is an environmental engineer and graduated from BC in 2021, majoring in Environmental Studies and Economics. Elizabeth was also a student participant in Schiller's Environmental Racism Summit in spring 2021.



ENVS Spring Research Symposium. The Environmental Studies Program hosted its annual Spring Research Symposium in the Schiller Institute Convening Space. The symposium features a poster session where senior environmental studies majors present their senior theses.

Hack the Heights. The Institute once again co-sponsored the Hack The Heights event, which is a hackathon organized by the Computer Science Society at Boston College. The group's goal is to promote coding for students across campus.

Make-a-thon. The Institute was among several campus partners supporting BC's second annual Make-a-thon. The event was organized by the student organization MakeBC. Similar to the concept of a hackathon, a make-a-thon challenges students to create a physical object in 24 hours. Students were given a choice of four tracks to compete in: Sustainability, Entrepreneurship, Developmental Technologies, and Art. The Institute sponsored the prize for the Sustainability track. Schiller staff participated in the event, including opening remarks by Kaley McCarty and judging by Greg Adelsberger and Erik Sjostrom.



Social Impact Entrepreneurship Series: Elliott Bennett, Ecotone Renewables. Partnering with the student group Entrepreneurs for Social Impact, we hosted BC alum Elliott Bennett for a networking event. Ecotone Renewables's mission is to make sustainable food and agriculture systems more accessible and prevalent outside the industrial scale.

Schiller Student Board

Launched in spring 2023, the Schiller Student Board continued to grow and evolve in the 2023-24 academic year. The Board provides students from across campus interested in energy, environment, and health another way to engage with the Institute's work. Board members function as both an extension of the Schiller Team, assisting with planning events and supporting communications, and advisors, providing valuable student insights. The Board consists of three subcommittees: events, communications, and research. A team of elected officers, working closely with Schiller Institute staff, coordinates the Board's activities and organizes monthly all-member meetings along with periodic subcommittee meetings. Thalia Chaves was the President of the Board during the 2023-24 academic year, along with Hayoung Cho as Vice President, Elliana Steely as Secretary, and Munachi Onyiuke as Treasurer.

Poet Laureate

A central aspect of the Schiller Institute's mission is to bring together humanistic and scientific endeavors. This year, we were happy to continue working with our inaugural Schiller Poet Laureate, undergraduate student Jesse Julian (MCAS, class of 2026). We first met Jesse when she won the Schiller sponsored prize for the event, *What The Constitution Means to Us: A Celebration of Constitution & Citizenship Day.* As our Poet Laureate, Jesse writes poems inspired by the Institute's work.

Jesse shares that her poem "once upon a time," is "a reflection on youth wellbeing," a running theme in the research symposium of October 18, 2023 which highlighted research conducted by Schiller Institute internal grantees.

once upon a time
Jesse Julian
Once Upon a Time,

a future now unfolds
children playing patients
the world an ugly foe

a fear after resettlement
unstable Neverland
delusion in the limelight
the dreams of Peter Pan

"wish upon a star
breathe the fairy dust"
we blur the fact and fiction –
but work for what is just

progress past what has aged
turn to all anew
the youth must stay engaged
and the future starts with you.

The other poems Jesse wrote as the Schiller Institute's Poet Laureate can be found on the Schiller website.

Student Employees

The Institute's success is thanks in part to multiple talented student employees.

Kimberly Black

Kimberly graduated in May 2024 with a Bachelor of the Arts in Communications and Film Studies. This past year she greatly increased engagement with the Institute's Instagram account, including instructing the COP delegation on how to post their highly successful takeover posts. Kim also edited the majority of the videos that appear on the Institute's YouTube page, and created a student employee manual to set up our future student employees for success.

Catherine Enwright

Catherine Enwright is a doctoral student in the English Department. She worked with the Institute during Summer 2023 as part of the PhD summer internship program managed by the Institute for Liberal Arts. Catherine contributed to many projects, including assisting with our self-assessment of the Working For and With Communities course.

Elizabeth Perez

Elizabeth graduated in May 2024 with a dual degree in the School of Social Work and the School of Theology and Ministry. She was the graduate assistant for the Global Public Health and the Common Good program. She primarily supported communications efforts for the minor, including the bi-weekly newsletter and flyers for events.

Julia Wowkun

Julia Wowkun is an undergraduate assistant pursuing a Bachelor of the Arts in Environmental Studies with a Concentration in Entrepreneurship and a minor in Finance. She led the marketing and communications for our inaugural COP Symposium, including creating flyers and posters to advertise the event, designing a slideshow shown during the event, and taking photos and videos during the event. Julia also designed this year's annual report.

Sara Zakaria

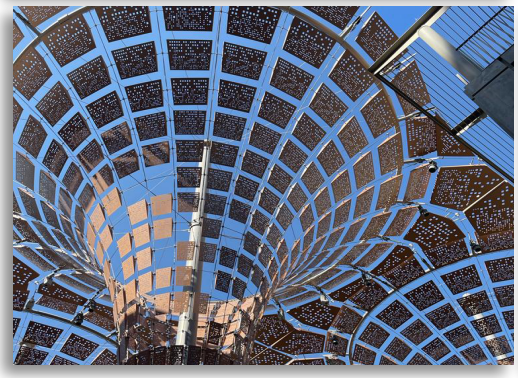
Sara graduated in May 2024 with a Bachelor of the Arts in Communications. She designed flyers and created templates for future use for many of the Institute's recurring speaker series, including the SI-GECS symposium and faculty social hours. She also led marketing and promotion for Schiller courses, such as the *Working For and With Communities* course.

UNITED NATIONS CONFERENCE OF THE PARTIES (UN COP)

Boston College is an official observer organization to the United Nations Framework Convention on Climate Change (UNFCCC), which enables the institution to send a delegation to one of the foremost international meetings on climate change, the Conference of the Parties (often simply referred to as COP). COP provides an annual forum for treaty parties to negotiate new goals and review progress toward existing commitments and typically culminates in an agreement released at the close of the conference, perhaps the best known example of which is the Paris Agreement. The Schiller Institute for Integrated Science and Society is proud to administer BC's COP programming and led a delegation of 20 students, faculty, and staff to COP28, which was held in Dubai from November 30 – December 12, 2023.

Delegation

A selection committee organized by the Schiller Institute selected the COP28 delegation through a competitive two-round campus-wide application. Each year, the UN and the host nation allocate badges to each observer organization. For COP28, BC was allocated 10 badges, which enabled 20 people to attend. Those badges were highly sought after as over 270 students and faculty applied to be part of the delegation. The Institute coordinated a 7-member interdisciplinary committee consisting of faculty, administrators, and one undergraduate student to select the Boston College delegation. Applicants were assessed on a variety of criteria with the ultimate goal of selecting a delegation that represents the University through a diversity of disciplines, experience, and cultural perspectives.



The delegation traveled in two groups with María Piñeros-Leaño (Associate Professor of Social Work) serving as faculty lead for the first group and Praveen Kumar (Associate Professor of Social Work) leading the second group. The delegation included three additional faculty members, six graduate students, eight undergraduate students, and one staff member. The delegates represented the Carroll School of Management, Connell School of Nursing, Law School, Lynch School of Education and Human Development, School of Social Work, and the Morrissey College of Arts & Sciences, including Biology, Economics, Earth and Environmental Sciences, English, Environmental Studies, Global Public Health and the Common Good, History, Human-Centered Engineering, Political Science, and Theology.

COP Events and Symposium

The Institute hosts events in the lead up to COP to engage the campus community and spread awareness about the highly influential conference and BC's participation. The first event this year was a panel discussion called **The New UN Plastics Treaty**. The panel was hosted by David Wirth, a COP27 delegate and Professor and Dean's Distinguished Scholar at BC's Law School. The panelists included Philip Landrigan, Director of the Program for Global Public Health and the Common Good and Director of the Global Observatory on Planetary Health; Maria Ivanova, Professor and Director of the School of Public Policy and Urban Affairs, Northeastern University; Kilaparti Ramakrishna, Director of Marine Policy Center and Senior Advisor to the President on Ocean and Climate Policy, Woods Hole Oceanographic Institution; and Josh Lincoln, Senior Fellow at the Centre for International Law and Governance, Tufts University. The second event was titled **Taking BC to New Heights: Students at COP28 in Dubai** and was a collaboration with UGBC's Environmental Sustainability division. Students were invited to stop by a table on the academic quad to learn more about BC's participation in COP28.

Coincident with COP28, the Institute hosted **Dispatches from Dubai**. The Dispatches provided members of the campus community with an opportunity to directly interact with the delegation while they were in Dubai. Two Dispatches were held, one primarily with undergraduate students and one primarily with graduate students and faculty members. People gathered in the Schiller Institute Convening Space and connected with the delegation via Zoom.

This year's COP programming culminated with the inaugural **COP Symposium**. The half-day event consisted of a student panel, a faculty panel, and multiple exhibits where attendees interacted with delegates directly. The delegation designed the Symposium to be a "mini COP," providing BC faculty and students who didn't travel to Dubai with an opportunity to share in their experiences. Please visit the Institute website to learn more about the Symposium.

EVENTS

In addition to the events noted previously in the report, the Schiller Institute hosted and co-sponsored many additional events during the academic year. These events are designed to bring members of the campus community together and to generate conversation about energy, environment, and health.

Events Hosted by the Schiller Institute

A defining feature of the Institute is its identity as a place which draws upon and supports the expertise and perspectives of faculty across all of Boston College's departments, schools, and colleges. **The Schiller Institute Welcome Celebration for New Faculty** invited all new faculty members at Boston College to enjoy a cocktail reception and hor d'oeuvres with colleagues, mingle with Institute faculty and staff, and learn about the Institute's programs and grants. The Institute also continued our **Faculty Social Hour** series, providing an informal setting for faculty with research interests in energy, environment, and health to connect. Recognizing that postdoctoral scholars often don't have opportunities to connect with peers outside of their discipline, the Institute also collaborated with the Office of the Vice Provost for Research on **Postdoc Social Hour**.

The **Schiller Institute Distinguished Lecture Series** continued this year with a talk by Gary W. Brudvig, Professor of Molecular Biophysics and Biochemistry and the Director of the Yale Energy Sciences Institute. Dr. Brudvig's seminar was titled "Water Oxidation Catalysis for Artificial Photosynthesis," and discussed cost effective methods for efficiently capturing and storing solar energy, which is among the grand challenges of science.

Under the new direction of Core faculty member Yi Ming, the **Interdisciplinary Research Seminar Series on Climate Change** featured an exciting lineup of external and internal speakers:

Andrew Gettelman

Andrew Gettelman, Department of Energy Pacific Northwest National Laboratory, presented "Actionable Information From Climate and Weather Modeling." Dr. Gettelman is one of the world's leading climate modelers with a wide range of research interests. He shared how to use climate models for understanding and projecting climate impacts and possible policy options.

Hector J. Jimenez Gonzalez

Hector J. Jimenez Gonzalez, Professor of Physics at the University of Puerto Rico, Mayagüez (UPRM), presented "From Trends to Adaptations: Understanding Puerto Rico's Climate Challenges." Dr. Jimenez Gonzalez is currently focused on problems related to the physics of the atmosphere as well as the challenges that climate change is posing to Puerto Rico and the Caribbean.

Ann Pearson

Ann Pearson, Murrary and Martha Ross Professor of Environmental Sciences at Harvard University, presented "Anoxia and the Marine Nitrogen Cycle." Dr. Pearson's research focuses on applications of analytical chemistry, isotope geochemistry, and molecular biology to biochemical oceanography and Earth history. Through study of the "how, when, and why" of microbial processes, her work yields insight about environmental conditions on Earth today, in the past, and about potential human impacts on our future.

Claudia V. Diezmartínez Peregrina

Claudia V. Diezmartínez Peregrina, PhD Candidate in the Department of Earth & Environment at Boston University, presented "Climate Action, Finance, and Justice in Cities: Elevating Municipal Finance as a Site of Climate Politics." Her research focuses on urban climate policy, climate finance, and climate justice. Specifically, she studies how cities across the United States are designing, financing, and implementing policies that serve not only to mitigate or adapt to climate change, but also to improve social justice in urban communities.

Pep Canadell

Pep Canadell, Chief Research Scientist in Australia's CSIRO Environment and Executive Director of the Global Carbon Project, presented "Decoding Our Carbon and Climate Futures, and the Imperative for Net-Zero Emissions." Dr. Canadell focuses on collaborative and highly integrative research to develop national, continental, and global budgets and trend analyses of the main greenhouse gasses, including carbon dioxide, methane, and nitrous oxide.

Mark Behn

Mark Behn, Professor, Earth and Environmental Sciences department at Boston College, presented "Greenland Research."

John Yargo

John Yargo, Core Fellow/Visiting Assistant Professor in Environmental Humanities at Boston College, presented "What Was Environmental Catastrophe, ca. 1688."

Dave Deese

Dave Deese, Professor, Political Science department at Boston College, presented "Decarbonizing the Most Difficult Sectors: Where and When Green Hydrogen?"

Philip J. Landrigan

Philip J. Landrigan, Director of the Program for Global Public Health and the Common Good and Director of the Global Observatory on Planetary Health, presented "Growing threat of chemical and plastic pollution and its strong intersection with social injustice."

SI-GECS Symposia

To showcase the work of our 2022-23 internal grant recipients to the broader Boston College community and further encourage interdisciplinary discussion and collaboration, the Schiller Institute held a series of research symposia in the Schiller Institute Convening Space during fall 2023. We organized the Schiller Institute Grants for Exploratory Collaborative Scholarship (SI-GECS) projects into three thematic groups: Social and Community Impact, Energy and Climate Change, and Health and Well-Being. After opening remarks by Executive Director Laura J. Steinberg, our Schiller Institute Poet Laureate, Jesse Julian, presented an original poem inspired by that session's grantee projects. Grantees then presented their projects, answered questions, and engaged in dialogue with symposium participants. The symposia were well-attended, with between 20 and 40 guests at each session.

Co-Sponsored Events

In addition to events hosted by the Institute, we co-sponsored many exciting events with campus partners throughout the year. These events included:

What The Constitution Means to Us. The Institute co-sponsored this event put on by the Clough Center for the Study of Constitutional Democracy. The event invites faculty and students to consider the following prompt: *Since the founding of the United States, the American Constitution has been central to our public life. It has inspired hope, and it has provoked despair. It has remained in place, as few other national constitutions have. Yet it has also repeatedly been changed, and some today think it needs to change again. At a moment when its basic meaning seems more contested than ever, how should we look at the Constitution today?* This year's event featured Sarah Lunnie, one of the co-creators of What the Constitution Means to Me, and a Boston College alumna (Class of '08). The Schiller Institute sponsored the prize for the best student submission related to energy, environment, or health.

Climate Change Professional Dinner and Networking Night. The event provided students with a career interest in climate change with the opportunity to network with BC faculty and alumni in the field. The design of the event was meant to reflect a combination of an academic conference or professional networking dinner, including a keynote speech by Institute Professor Yi Ming. The Institute collaborated with the BC Career Center, utilizing their Big Ideas Innovation Grant program, which was developed to encourage staff to innovate and experiment with bold, new programs that enhance career education and student opportunities. The event was a success as 100 percent of student respondents in the post-event survey reported they felt confident in their ability to communicate with alumni and professionals after attending the event. See this article for more details.

Suzanne Simard: Finding the Mother Tree. Suzanne Simard is a Professor of Forest Ecology at the University of British Columbia and the author of the book Finding the Mother Tree. She is a pioneer on the frontier of plant communication and intelligence and has been hailed as a scientist who conveys complex, technical ideas in a way that is dazzling and profound. The event was co-sponsored by the Environmental Studies Program, Earth and Environmental Sciences Department, and Biology Department and part of the Lowell Humanities Series.

Kate Brown: "The Interminable Cycles of Chernobyl's Catastrophes: War, Accident, and War Again". Kate Brown is the Thomas M. Siebel Distinguished Professor in the History of Science at the Massachusetts Institute of Technology. She is the author of several prize-winning histories, including her latest book Manual for Survival: A Chernobyl Guide to the Future. The event was co-sponsored by the History Department and part of the Lowell Humanities Series.

Lisa Genova: How Art and Science Collaborate in Illuminating what it is like to live with Alzheimer's Disease. Lisa Genova is a New York Times bestselling author and neuroscientist. Dr. Genova's extensively researched fiction focuses on people living with neurological diseases and disorders, people who tend to be ignored, feared, or misunderstood, portrayed within a narrative that is accessible to the general public. The event was co-sponsored by the Psychology and Neuroscience Department as part of the Park Street Corporation Speaker Series.

Water and Iran's Environmental Problems with Kaveh Madani. Kaveh Madani is an environmental scientist, educator, and activist known for his work on complex human-natural systems at the interface of science, policy, and society. He is currently the Director of the United Nations University Institute of Water, Environment and Health (UNU-INWEH), known as the UN Think Tank on Water, where he leads scientific research and policy solutions to address the growing global water and environmental crises. The event was co-sponsored by Boisi Center for Religion and American Public Life, Islamic Civilization and Societies Program, Program for Global Public Health and the Common Good, and Earth and Environmental Sciences Department.

Food Symposium. Faculty, students, and staff from different disciplines and expertise across campus broadly focused in the field of food and nutrition came together at this symposium. Each lab gave a short presentation followed by a poster session presented by attendees at any career stage. The symposium provided space for exchange of ideas with the goal of building community, fostering collaboration on all aspects of food and nutrition, and laying the groundwork for a major interdisciplinary proposal.


COLLEGIUM BOSTONIENSE
FUND. MDCCCLXIII
RELIGIONI ET BONIS ARTIBUS
αι ἐν ἀριστεύειν