



**THE SALATA INSTITUTE
FOR CLIMATE AND SUSTAINABILITY**
at Harvard University

2024 IMPACT REPORT



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Doctoral candidate Raphael Kay MDes '22 tests the liquid window in a mock-house experiment to measure how much energy is needed for heating and cooling—a project supported by the Seed Grant Program and led by Joanna Aizenberg.



LETTER FROM THE DIRECTOR

Now in its third year, the Salata Institute for Climate and Sustainability at Harvard University has evolved from a start-up to a developing, robust organization. This report highlights the results of this evolution—with exciting new research collaborations for real-world impact, consequential convenings and events organized by the institute’s Climate Action Accelerator (made possible by an anonymous gift), which propagate critical new knowledge that Harvard is generating, and hundreds of students and alumni benefiting from the institute’s programs. The world beyond Harvard’s walls is taking notice of the University’s unique contributions as media coverage of our work increases and the institute establishes a presence at Climate Week NYC and London Climate Week as well as in Washington DC and elsewhere around the world. Earlier this year, a distinguished group of climate leaders convened for the first time on campus as the founding members of the Salata Institute Advisory Board, marking a significant milestone for the institute.

These accomplishments reflect a broad consensus among Harvard’s leadership that new ways of working are required to make a genuine impact on the climate crisis. The Salata Institute has led the way, demonstrating how Harvard can be more effective by forging cross-School, interdisciplinary collaborations in research, education, and engagement. The Salata Institute’s Climate Research Clusters, for example, are bringing together world-class faculty to collaborate on projects that will help reduce carbon emissions and safeguard people from climate impacts. And through the Climate Action Accelerator, our faculty are working directly with an array of stakeholders and decisionmakers to confront such challenges.

For Harvard to realize its full potential, the University must and will deliver more interdisciplinary research and teaching of the sort that produces climate solutions. Expanding Harvard’s work on climate solutions requires increasing the number of faculty working on climate and sustainability by inviting scholars already on campus into the field and by recruiting new leaders committed to climate research. The institute is attracting current Harvard faculty through multiple programs, including its Climate Research Clusters program, its highly successful Seed Grant Program funded by the Troper Wojcicki Foundation, and a new, one-week



“Rarely in its history has Harvard focused with this level of intensity—and forged this level of alignment and consensus across the University—on issues of such global significance. This is a once-in-a-generation moment at Harvard.”

JAMES H. STOCK, DIRECTOR, THE SALATA INSTITUTE FOR
CLIMATE AND SUSTAINABILITY



climate frontiers course for junior faculty that will be offered in January 2025. The institute also collaborates with Schools to recruit new faculty leaders in climate and the energy transition.

Creating a stronger faculty cohort is the Salata Institute's highest priority in its effort to position Harvard University as a global leader on climate. The institute's leadership is expanding and enriching a community of faculty committed to the common mission of improving human welfare and planetary stewardship. The institute provides a home for this community, making new research collaborations, teaching, and public engagement on climate and sustainability possible.

Rarely in its history has Harvard focused with this level of intensity—and forged this level of alignment and consensus across the University—on issues of such global significance. This is a once-in-a-generation moment at Harvard. On behalf of our community, I am grateful for your meaningful partnership as we rise to the occasion.



James H. Stock
Director, The Salata Institute for Climate and Sustainability



James H. Stock (left) discussing carbon pricing with MIT economist Catherine Wolfram AB '89 (on stage) and Sheldon Whitehouse (on screen), Democratic senator from Rhode Island and co-chair of the US Senate Climate Task Force, at the 2024 Harvard Climate Action Week.



EDUCATION

Offering Harvard University students more opportunities than ever to learn about climate and sustainability and to pursue careers in these fields



Chun-Yu Su '27 (from left), Scott Edwards AB '86 (Professor of Organismic and Evolutionary Biology), Naomi Oreskes (Henry Charles Lea Professor of the History of Science), Mario Cohn-Haft (Brazilian National Institute for Amazon Research), and Oliver Lazarus (doctoral candidate) birdwatching in the Amazon Rainforest—one of the many excursions during the Harvard Amazon Rainforest Immersion.

Over the past year, the Salata Institute has become Harvard's hub for co-curricular and career advancement programs in climate and sustainability. The institute offered students hands-on learning opportunities on campus and in places ranging from the Amazon to Dubai to Washington, DC. The institute also hosted leading practitioners who visited either to speak with students about their work or to recruit them as employees in their organizations.

The **Summer Research Funding Program** awarded stipends totaling \$85,000 to 34 undergraduate and graduate students who conducted climate-related research either independently or under faculty supervision. Nine of these students were also provided with room and board and additional programming through Harvard's Summer Undergraduate Research Village.

Another group of 21 students participated in the **Harvard Amazon Rainforest Immersion** in Brazil, a collaboration between the David Rockefeller Center for Latin American Studies and the Salata Institute. Students learned about the Amazon's ecosystems, societies, economies, and the complexities of sustainable development in the region.

Students also fanned out across four continents as summer interns through the Salata Institute's **Harvard Climate Internship Program**. This year the program supported 29 graduate students from Schools across the University. These interns worked in places such as Washington, DC; San Francisco, California; and Bentonville, Arkansas, as well as in Canada, China, France, India, Indonesia, Japan, Korea, Mongolia, South Africa, Switzerland, the United Kingdom, and Vietnam. More than 70 students have participated in the program since its inception in 2022.



The **Salata Institute Policy Summer Internship Program** placed four Harvard students in internships at the Massachusetts State House, where they supported legislators with climate and sustainability agendas. The institute also funded internships and research assistantships for 13 undergraduate students who participated in Fellows at the Forefront, a program of the Center for Public Service and Engaged Scholarship.

Students interested in climate and sustainability careers also benefited by interacting with climate practitioners, who spoke on campus in the Salata Institute's **Careers in Climate Action Speaker Series**. Nearly 500 students also attended the second annual **Climate and Sustainability Career Expo** in November 2024. The institute led the organization of the event in collaboration with Harvard's Schools and Massachusetts Institute of Technology.

Throughout the academic year, the institute offered funding for activities that enrich students' study of climate and sustainability. The **Salata Institute Climate Collaboration Grant Program**, which funds projects and events that involve two or more student organizations, has backed 39 student organizations over the past two years.



Joshua Steib COL '24 (far left) and Angela Zhong '25 (far right) met former Vice President Al Gore AB '69 with members of the official United Nations Framework Convention on Climate Change Youth Constituency media team.





Chris Mesfin '26 at the Massachusetts State House, where he completed a summer climate policy internship through the Salata Institute.

Individual students also received funding through the Salata Institute's **Travel Grant Program**, which funds travel for educational or professional development reasons, and the **Conference of Parties (COP) Student Observers Funding Program**. In partnership with the Harvard Project on Climate Agreements, the institute had awarded grants of up to \$2,000 to 11 students who attended COP29 in Baku, Azerbaijan. This is a testament to the success of Harvard students' previous involvement at COP28 in Dubai, United Arab Emirates.



Tim Fargiano AB '24 representing an environmental consultancy at the 2024 Salata Institute Climate and Sustainability Career Expo.

Incoming first-year students were introduced to climate issues and the Salata Institute through Harvard's **SPARK Program**, which enables students to take on climate-related public service projects in their communities the summer before they enroll at Harvard College. Other incoming students participated in a student-led, peer-to-peer **Summer Climate Primer Pilot Program**, which engaged them in climate discussions and familiarized them with related resources available on campus. The institute supported both of these programs.

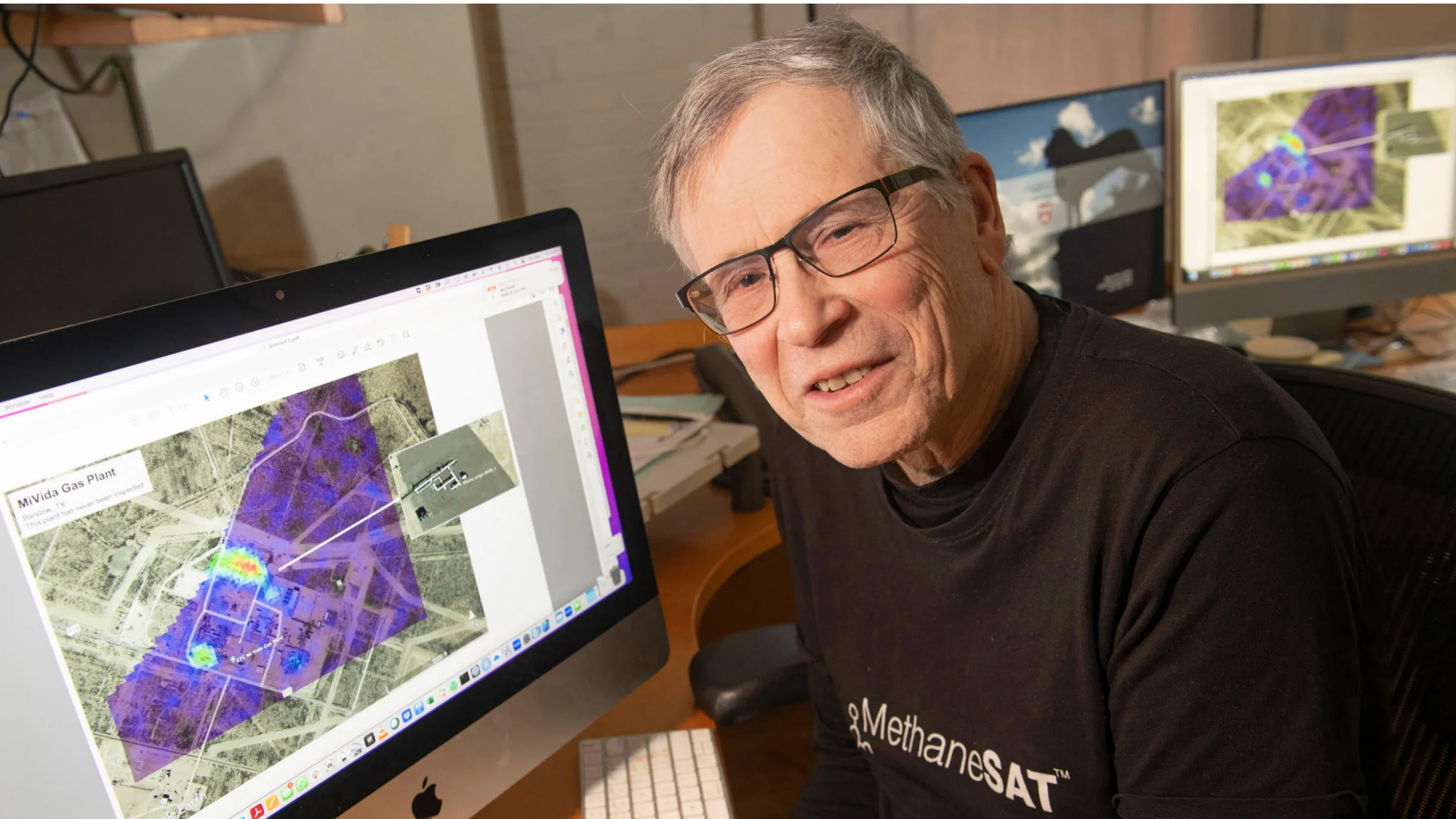
“The pronounced presence and advocacy of youth and indigenous populations at COP28 were striking. Their energy, commitment, and clarity in messaging underscored the real human impact of climate change and the critical need for inclusive climate action. Their voices served as a powerful reminder to us, technologists, investors, and policymakers in the climate space, about why we picked our respective career paths in the first place.”

SADOK KECHAOU MBA '24, COP28 PARTICIPANT



RESEARCH

Pursuing research that leads to effective and durable climate solutions



Steven Wofsy PhD '71 is a co-investigator on the Reducing Global Methane Emissions research cluster.

CLIMATE RESEARCH CLUSTERS PROGRAM

The Climate Research Clusters Program supports cross-School applied research that promises to make a real-world impact in meeting climate challenges. These interdisciplinary efforts focus on problems that are narrow enough to ensure that concrete solutions emerge but broad enough that the solutions offer significant progress. This program is the most ambitious, centrally-funded climate research program offered at Harvard University and is a cornerstone of the Salata Institute's research activities. Clusters are funded for three years at up to \$600,000 annually.

In February 2023 the institute announced the first five Climate Research Clusters, with projects ranging from climate mitigation to adaptation and involving 30

faculty members. For the second cycle of this program, the institute received 28 concept notes from nearly 100 faculty across the University, and it invited nine teams to submit full proposals. A review committee with leading experts from Harvard and other universities is now evaluating these proposals using the criteria of real-world impact, innovation, equity, and interdisciplinary, cross-School collaboration. The Salata Institute expects to fund up to three new projects, scheduled to be announced at the beginning of 2025. These awards will increase the number of active Climate Research Clusters to eight. Each cluster will have support for three years, and the institute's total investment in interdisciplinary research will reach nearly \$13 million.





Now 18 months into their work, the first five Climate Research Clusters are reporting progress in meeting their project objectives.

Reducing Global Methane Emissions

The Reducing Global Methane Emissions cluster has already initiated 20 research projects involving faculty, postdoctoral researchers, and graduate students from across campus. Some examples of these efforts include:

- Faculty from the Harvard John A. Paulson School of Engineering and Applied Sciences and Harvard Law School are collaborating in the application of high-resolution, satellite-based data to improve regulatory policy aimed at reducing methane emissions from landfills in the United States.
- Economists at Harvard Kennedy School and Harvard Business School are working to improve estimates of methane-emissions-abatement costs—because when these costs are better characterized, resources can be allocated more effectively to reduce emissions.
- Engineering faculty are developing an accurate, wearable sensor to track methane emissions from cattle, while agricultural economists are conducting research to better assess the effect on methane emissions in transitioning from flooded to dry rice cultivation in China.

Climate Adaptation in South Asia

The Climate Adaptation in South Asia cluster has launched the Community Heat Adaptation and Treatment Strategies longitudinal study, a first-of-its-kind project that evaluates how heat and humidity impact the lives and livelihoods of the working poor in the Global South. The study follows women working in the informal economy in a variety of trades (e.g., home-based garment stickers, farmers, and factory workers) in Ahmedabad, India, and surrounding areas for an entire year. Their homes and workplaces are equipped with microsensors providing continuous measurements of temperature and humidity. Wearable sensors and regular check-ins track changes in their physiological responses, earnings, sleep, and well-being.

Preliminary data suggest that these women suffer chronic exposure to dangerous heat and humidity. Their homes do not cool down at night, and temperatures remain above safe thresholds. Monsoons bring no respite—as temperatures drop, humidity rises and is trapped in these homes, keeping the heat index very high even after summer heat has receded. Since most early warning systems and heat wave policies currently rely only on temperature and not on humidity, this finding has major implications on heat action plans, adaptation strategies, and workforce safety. The team is working closely with policymakers in South Asia to ensure that project findings are incorporated into the design of new, life-saving adaptation strategies. The cluster also received a \$1.3 million dollar grant in September 2024 from the Mindereroo Foundation to expand their work in the region.





Corporate Net-Zero Targets

The Corporate Net-Zero Targets cluster is developing a best-of-its-kind dataset of climate commitments and outcomes from the largest 3,000 US companies. It provides the most complete picture to date of the state of play for corporate emission reduction commitments, related renewable and efficiency goals, and their implementation. This database, produced through data compilation and analysis of corporate reports of large, publicly-listed companies over the past decades, will address key gaps in the reporting in current voluntary initiatives.

The cluster has also developed a power sector dataset that will help to identify the opportunity and challenge for emissions reductions. Through these datasets, the group will assess whether and how net-zero commitments are driving emissions reductions. The team recently published an assessment of the evolving role of emission offset credit markets, which helped inform the US Department of Treasury and the publication of Voluntary Carbon Markets Joint Policy Statement and Principles.

In October 2024, the cluster hosted an academic convening with scholars and select NGO practitioners, giving them an opportunity to share their early research findings, engage with new scholarly work, and receive practitioner feedback as the group plans activities for the second half of the grant period. The cluster is focused on how best to identify actionable strategies for stakeholders, policymakers, and

companies seeking to ensure net-zero transition strategies drive significant emissions reductions.

Climate Adaptation in the Gulf of Guinea

The Climate Adaptation in the Gulf of Guinea cluster is examining sea-level rise, coastal erosion, and urban flooding in Côte d'Ivoire, Ghana, and Nigeria through partnerships with West African researchers at University of Felix Houphouët-Boigny, University of Ghana, and University of Lagos. The project has two key objectives. The first is to develop a vulnerability index of the West African coast from 1970 to 2010 that will illustrate how the coastline has changed and help predict future changes. The second involves fieldwork with selected communities in these three countries to assess the impact of sea-level rise, coastal erosion, and urban flooding.

Last year the team visited the three countries and selected field sites, met with community leaders, identified local environmental NGOs to work with, and visited relevant government ministries and international development organizations such as the United Nations Development Programme. The team also delivered talks on their project at the three partner universities in the region and extended an offer to train two postdocs from each university in climate science.

In May 2024 field teams from the three countries conducted field surveys on fishing and the community's understanding of sea-level rise, erosion,





and flooding. The three West African teams met in Accra on August 1–2, 2024, for a workshop to present their findings to a group of local researchers, policymakers, and NGOs. One of the cluster's first reports on the decline of fishing as a livelihood in the region was covered extensively in the African press. The group is planning to publish more policy briefings for policymakers in the region and the United States, and for other relevant stakeholders elsewhere.

Strengthening Communities

The Strengthening Communities research cluster examines the social costs and benefits of changes in the energy system, and proposes concrete ways for communities, firms, and governments to navigate the wide range of fiscal, legal, regulatory, and development choices they face. As part of this project, the cluster has produced three major publications:

1) [*Crossed Wires: A Salata Institute–Roosevelt Project Study of the Development of High-Voltage Transmission Lines in the United States*](#) focuses on the regulatory, planning, and siting obstacles to building new transmission capacity and outlines a national, coordinated strategy to tap into the nation's considerable wind and solar energy potential. *Crossed Wires* was released at the 2024 Harvard Climate Action Week by former Secretary of Energy Ernest Moniz and Stephen Ansolabehere PhD '89 and featured in a Washington, DC event in December 2024.

2) [*How Grid Projects Get Stuck: Four Case Studies in Long-Distance Transmission Development*](#), released in June 2024, examines four specific projects and lessons about the political, social, and economic obstacles to transmission development, as well as ways to improve the public engagement process.

3) [*Federal Land Leasing, Energy, and Local Public Finances*](#) highlights the paradox of how legislation that allocates revenue from fossil fuel energy projects on federal land to states and local communities contrasts with renewable energy projects, where revenue is predominantly retained by the federal government. This discrepancy represents a missed opportunity to support local economies through renewable energy revenue and build political support for the clean energy transition. This is the first white paper produced and promoted by the Salata Climate Action Accelerator, and an abridged version of the study's findings was published in *The Boston Globe's* op-ed section.

The cluster is currently engaging with indigenous and tribal groups in the Pacific Northwest and the Gulf of Mexico states with the goal of devising new and pragmatic policy playbooks for (1) effective, equitable, and community-driven energy development and (2) advancing community participation in developing energy policy in energy-rich regions.





Research Associate Luke Zehr works inside an open-top CO₂ chamber checking experimental tree seedlings of three different microbial partnerships to see which seedlings respond most strongly to elevated CO₂—a project supported by the Seed Grant Program and led by Benton Taylor.

SEED GRANT PROGRAM

The Salata Institute's Seed Grant Program in Climate and Sustainability has had great initial success. The program funds nascent ideas or early-stage research projects that use novel or interdisciplinary approaches that could develop into practical climate solutions. The Seed Grant Program was established in spring 2023 with a generous gift from Harvard University alumna and Salata Institute advisor Susan Wojcicki AB '90 and her husband Dennis Troper. Through the Troper Wojcicki Foundation, the program has thus far granted 32 awards over four funding cycles for a total of \$750,000. Faculty from nearly all Schools have received funding to pursue a diverse and interdisciplinary set of challenges, from developing innovative techniques to reduce the carbon emissions of new computing systems and building climate-resilient health systems for vulnerable populations to designing more energy-efficient windows for buildings and capturing carbon dioxide from the air. Calls for proposals go out twice a year, in October and January.

The Salata Institute is now beginning to see results from the first grants made in 2023.

On the topic of sustainable computing, **Gu-Yeon Wei** (right), Robert and Suzanne Case Professor of Electrical Engineering and Computer Science at the Harvard John A. Paulson School of Engineering and Applied Sciences, reported that his team developed a new tool called “Cordoba,” which introduces carbon optimization techniques for the computing industry. Cordoba highlights a novel metric of *total carbon delay product* for optimization purposes, drawing on the widely used energy efficiency metric of *energy-delay product* in the digital electronics space. The tool has the potential to reduce carbon emissions through optimization. Wei and his team credit the seed grant for helping lay the foundation for their recently awarded National Science Foundation Expedition Grant titled *Carbon Connect: An Ecosystem for Carbon Computing*. This multi-institutional \$4 million grant will help establish new standards for carbon accounting in the computing industry.



A key planning decision facing architects working on buildings in mixed climates is selecting window glass that prioritizes either heating or cooling energy conservation. **Holly Samuelson DDes '13** (right), associate professor of architecture at the Harvard Graduate School of Design, hypothesized that in certain buildings and cool climates, including much of the northern United States, revised “best practices” for south-facing window glass selection could shift a significant portion of building electricity demand from dirty to clean electricity production, while helping to protect against looming grid-level winter electricity peaks caused by electric heating. Her research showed that, in many cases, the benefits of lower sun-blocking glass during heating season will outweigh the cooling season detriments, especially when considering the evolution of HVAC systems and the electricity grid.

Samuelson’s research demonstrated a simple pathway for scalability and how those window glass choices could save annual electricity use, peak electricity use, and expected marginal carbon emissions, while also easing the threat of winter electricity grid peaks in cool-climate residences. She is currently applying for a major Department of Energy grant to expand her study.



Harvard T.H. Chan School of Public Health associate professor **Stéphane Verguet** (right) established his project in response to the World Health Organization’s initiative to develop low-carbon, sustainable health care systems. Over 80 low-, middle-, and high-income countries have committed to that goal, and Verguet’s research was designed to help these countries deliver on their commitments. Verguet and his team’s overarching aim has been to model the various carbon reduction approaches countries may use in their health care systems. These ways include how these systems are financed, how they deliver care, and how people try to reduce emissions by changing these systems.



The team is working with stakeholders in sub-Saharan Africa to improve the availability of key carbon footprint metrics, as well as identifying key interventions that could make health care systems more resilient to acute climate shocks. This effort aims to produce a set of ways for reducing carbon emissions—through interventions, measures, and policies for climate resilient health systems before, during, and after acute events (e.g., heat waves and floods). Verguet is engaging international donors and funding agencies (e.g., Norwegian Agency for Development Cooperation) regarding this work.

THE SALATA INSTITUTE’S PUBLIC REACH IN NUMBERS

545K+

SOCIAL MEDIA REACH

86K+

WEBSITE VISITORS

7,846

SOCIAL MEDIA SUBSCRIBERS

42+

HOURS OF CLIMATE VIDEO CONTENT

298

MEDIA MENTIONS OF HARVARD CLIMATE FACULTY

60+

INSTITUTE’S FACULTY MEDIA PLACEMENTS

350+

JOURNALISTS IN INSTITUTE’S REPORTER NETWORK

10+

HOURS OF CLIMATE CAREER TALKS PUBLISHED



BURKE CLIMATE AND HEALTH FELLOWS

In partnership with the Harvard Global Health Institute and made possible by a generous gift from Katherine States Burke AB '79 and T. Robert Burke, the Burke Climate and Health Fellowship offers support for eligible research fellows, postdoctoral scholars, and early career faculty pursuing scholarly research at the intersection of climate change and global health. This year, **Colleen Lanier-Christensen PhD '24** (below), postdoctoral fellow in the Department of the History of Science at Harvard University, has been awarded the 2024–25 HGHI–Salata Burke Climate and Health Fellowship for her project, “Climate Change, Public Health, and the Clean Air Act of 1970.”

As a Burke Climate and Health Fellow, Lanier-Christensen will complete and extend collaborative research on climate change and the Clean Air Act of 1970, which serves as the foundation of US air pollution policy and under which the Environmental Protection Agency has attempted to regulate CO₂. Her work examines why meaningful government regulation remains elusive even as greenhouse gas emissions continue to rise. The conventional explanation of US inaction has been that the Environmental Protection Agency lacked the legal

authority to regulate CO₂ emissions under the Clean Air Act of 1970—but in collaborative work with colleagues at Harvard and Duke, Lanier-Christensen has shown that the authors of the Clean Air Act intended the law to cover CO₂ and its potential climate effects.

Lanier-Christensen’s research will draw on her historical, public health, and environmental policy training to extend this work, arguing that there was a moment in the 1960s when earth and public health scientists came together to tackle the problem of air pollution, including CO₂. However, disparate disciplinary and conceptual frameworks separated “health” and “environmental” effects of pollution, delaying US climate action. Lanier-Christensen believes that this separation helps to explain why climate has not, until recently, been strongly recognized as a global health threat.

The project aims to provide historical accounting for policymakers and the judiciary tasked with crafting and interpreting effective climate policies. As recently described in [The Harvard Gazette](#), her work shows strong potential for significant impact on global health and environmental law.

“The research will examine how the public health and welfare effects of increasing CO₂ have been understood since the 1960s, how that knowledge shaped policymaking debates, and how it can now be used to strengthen climate policy.”

COLLEEN LANIER-CHRISTENSEN PHD '24, POSTDOCTORAL
FELLOW IN THE HISTORY OF SCIENCE DEPARTMENT



2023–24 Burke Climate and Health Fellows Update

Annikki Herranen-Tabibi PhD '22 (right) completed two trips to Ohcejohka and Anár in Sápmi (a cultural region stretching over Norway, Sweden, Finland, and Russia) to consult key experts and hold gatherings to inform local community members of her study. While there, she solicited views on priorities for her research questions and methods, as well as for the governance and use of research knowledge in accordance with the Akwé: Kon principles for work with Indigenous peoples. These principles provide guidance for carrying out cultural, environmental, and social impact assessments on proposed developments that may affect sacred sites or lands and waters traditionally inhabited or utilized by Indigenous and local communities.

While working to secure external grant funding for collaborative field investigations, Herranen-Tabibi conducted literature research on climate and health with an emphasis on the Arctic region and on Indigenous communities globally. She also presented her work at the Society for the Social Studies of Science in Honolulu, Hawaii, in November 2023; at the American Ethnological Society in Pittsburgh, Pennsylvania in April 2024; and at the American Anthropological Association in Tampa, Florida in November 2024. Herranen-Tabibi plans to submit for publication an article based on this work to *Cultural Anthropology*.



Jenny Lee PhD '22 (right) worked on developing a causal inference method to assess the health impacts of long-term exposure to air pollution on low-income children in the US Medicaid program. Through simulation studies, Lee estimated the causal exposure-response function between fine particulate matter (PM2.5) and respiratory hospitalization among children during 2000–2012 and found a definite association. Socioeconomically disadvantaged children may be more vulnerable to the effects of long-term PM2.5 due to increased prevalence of underlying conditions and limited access to preventive measures. This work, which has the potential to impact policy, was submitted to *Biometrics Practice* in July.

This past fall, Lee transitioned into a full-time, tenure-track faculty position at Ewha Woman's University, her *alma mater* and one of the top universities in Korea. She will bring her experience working on climate and health into her new faculty position.



STRENGTHENING HARVARD'S RESEARCH CAPACITY IN CLIMATE

Harvard University's ability to drive meaningful climate solutions hinges on its ability to attract and empower top climate faculty across a wide range of disciplines. Over the last year, the Salata Institute has engaged Schools in a University-wide effort to prioritize the hiring of climate-focused faculty who promise to deepen and expand Harvard's climate contributions. These efforts are already paying off. Over academic years 2024–2026, the University will welcome the following eight new faculty (below) who promise to deliver vital climate insights and innovations in their fields, expanding the institute's ability to make a difference.

This significant increase in the number of climate faculty builds on hiring efforts in 2023, which saw two new members join Harvard Business School: Christian Kaps (energy policy and energy markets) and Philippe van der Beck (climate finance and environmental, social, and governance).



Jeannine Cavender-Bares
PhD '00*

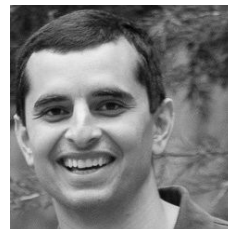
Faculty of Arts and Sciences

Climate focus:
Biodiversity



Elisa Iturbe
Harvard Graduate School of Design

Climate focus:
Architecture and carbon form



Ishan Nath*
Harvard Kennedy School

Climate focus:
Economics



Anna Russo*
Faculty of Arts and Sciences

Climate focus:
Economics



Zachary Schiffer
Harvard John A. Paulson School of Engineering and Applied Sciences

Climate focus:
Decarbonization of chemical industry



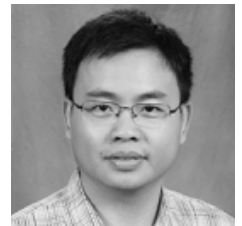
Wolfram Schlenker*
Harvard Kennedy School

Climate focus:
Climate and agriculture



Fiamma Straneo
Harvard John A. Paulson School of Engineering and Applied Sciences

Climate focus:
Arctic climate and ice



Le Xie*
Harvard John A. Paulson School of Engineering and Applied Sciences

Climate focus:
Electricity grid

*Indicates Salata Institute support



RESEARCH TO ACTION

Serving as a resource and partner to the full spectrum of stakeholders wrestling with the most difficult and divisive climate questions



Carlos Curbelo (on stage), a former GOP representative from Florida, and Edward Markey (on screen), a Democratic senator from Massachusetts, discussed bipartisan action on climate change on the first day of 2024 Harvard Climate Action Week.

CLIMATE ACTION ACCELERATOR

Made possible by an anonymous gift to the Salata Institute, the Climate Action Accelerator (CAA) aims to translate Harvard scholars' ideas and insights into meaningful action through convenings, partnerships, and engagement. In 2024, **Joseph Aldy PhD '05**, the Teresa and John Heinz Professor of the Practice of Environmental Policy at Harvard Kennedy School, served as the chair of the CAA Steering Committee, which guides the Accelerator's strategy.

In 2024, the Accelerator organized the second annual Harvard Climate Action Week (June 10–14) and held 11 convenings around a range of topics—such as electric vehicle charging infrastructure, the electrification of heavy-duty transport, climate adaptation in West Africa and South Asia, and solar geoengineering—engaging six different practitioner communities. These meetings served as workshops for specialists and as spaces where frank discussions could be had,

often under the Chatham House Rule. This successful model proved a useful way to connect Harvard's faculty and external participants.

CAA organized several other events that sought to raise the visibility and accessibility of Harvard's research on climate solutions, including sessions at the inaugural ClimaTech Conference in Boston and a fireside chat with Cassie Flynn, Global Director of Climate Change, United Nations Development Programme. The Accelerator also held the Salata Institute's first-ever event during Climate Week NYC, organizing panel discussions about solar geoengineering, US action on methane emissions reductions, and the effects of rising heat on workers' health, livelihoods, and productivity. These larger events connected the Salata Institute with hundreds of practitioners from around the world—many of whom are Harvard alumni.

HARVARD CLIMATE ACTION WEEK

The second annual Harvard Climate Action Week (HCAW) focused on strategies for reducing carbon dioxide emissions in the United States. Ali Zaidi, the White House Climate Advisor, gave the keynote address. Discussions throughout the event were grounded in research that the Salata Institute is supporting, as well as other climate studies taking place in Harvard's Schools and centers. For example, Jim Stock, the director of the Salata Institute, along with Catherine Wolfram AB '89 of MIT, engaged Senator Sheldon Whitehouse (D-RI) on the prospects for carbon pricing in 2025.

During HCAW, researchers also published a new resource for city governments aimed at facilitating broader ownership of electric vehicles, a critical component to reducing carbon emissions. The resource represented a joint research effort among the Salata Institute, the MIT Center for Energy and Environmental Policy Research, and Harvard Kennedy School's Taubman Center for State and Local Government.

More than 30 schools and centers participated in Harvard Climate Action Week over five days of in-person and virtual programming. These programs featured speakers from 17 countries and sovereign tribal nations. Attendees were also able to view climate change research exhibits at the Harvard Museums and take a field trip to the Harvard Forest. HCAW was well attended, well-received by attendees, and reached a wide audience online. Registrations more than doubled in 2024, and livestream promotion was successful, driving 8,400 streams compared to 1,300 streams in 2023.



Harvard Environmental Economics Program Director Robert Stavins PhD '88 moderating the panel "Strategies for Mitigating Global Methane Emissions."



Keshia DeFreece Lawrence, Ramapough Lenape tribal member, moderating "The Importance of Traditional Ecological Knowledge" panel.

HARVARD CLIMATE ACTION WEEK IN NUMBERS

78 SESSIONS

32 PARTICIPATING SCHOOLS AND UNITS

3,802 REGISTRATIONS

655 IN-PERSON ATTENDANCE

545K+ DIGITAL IMPRESSIONS

8.4K LIVESTREAM VIEWS

261.8K VIDEO VIEWS

1,237 NEW SOCIAL MEDIA FOLLOWERS

10 MEDIA CLIPS



ADVANCING THE ACCELERATOR'S IMPACT

The Accelerator is making progress toward its goals by anchoring its work around the research produced by the Climate Research Clusters. The core strategy entails identifying, engaging, and convening decision makers who would benefit from climate solutions now emerging from the clusters—sharing knowledge that is ready for development, implementation, scaling, and real-world impact. These opportunities include:

- Training stakeholders to use the Integrated Methane Inversion tool developed by Professor Daniel Jacob, who is part of the Reducing Global Methane Emissions cluster, for detecting methane emissions. Businesses and environmental groups alike can use this as a part of the implementation of the Environmental Protection Agency's regulation of oil and gas sector methane emissions.
- Scaling up the work of the Climate Adaptation in South Asia cluster by identifying organizations in the United States that could similarly deploy microsensors to measure high temperature and humidity experienced by workers, whose occupations place them at risk of these climate impacts.
- Engaging government officials, including members of Congress and local governments, around the recent outputs of the Strengthening Communities cluster, namely its *Crossed Wires* report (see page 10) that offers five core findings and a white paper about how renewable energy generated on public lands could yield revenue for local communities. The Accelerator circulated the white paper among the offices of 18 members of Congress, with a majority responding positively and several requesting follow-up meetings, as well as among key leaders at the Department of Interior, who requested staff briefings on the work.



A discussion led by Harvard Law School professors Richard Lazarus JD '79 and Jody Freeman SJD '79 with a panel of legal and government experts addressed the prospects for US climate law over the next five years.



At the 2024 Harvard Climate Action Week, Harvard Forest senior scientist Jackie Matthes AB '07 explaining how the research tower measures CO₂.



Harvard professors Robin Wordsworth and Frank Keutsch and doctoral candidate Britta Clark with Billy Pizer (CEO of Resources for the Future) discussing the science and ethics of solar engineering.



As it enters its third year, the Climate Action Accelerator is also planning stakeholder engagement around areas of climate research where Harvard University leads. Priority areas are:

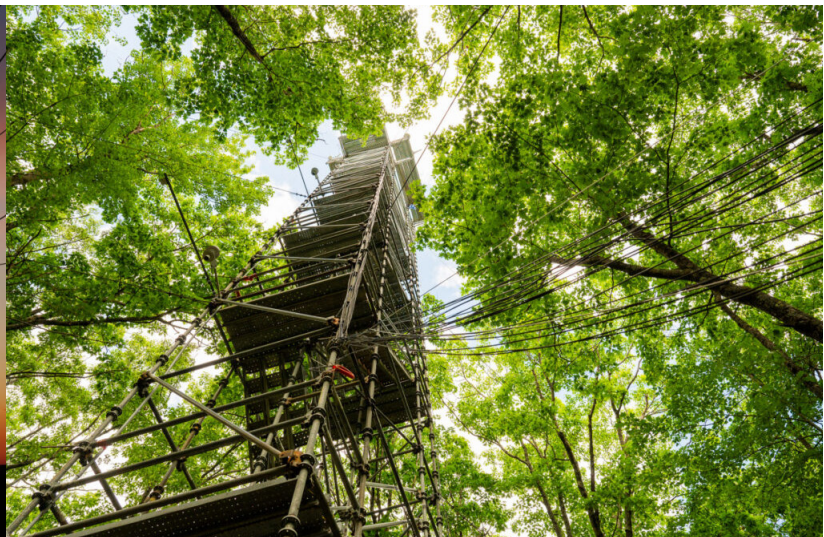
The modernization of the electric transmission

grid: The Accelerator is exploring collaborations with non-profit organizations and business stakeholders to provide the engineering, economic, institutional, and legal analyses to inform the regulatory and legislative reforms necessary for the build-out of the electricity transmission system, which would support a rapid decarbonization of the US energy system.

Global climate policy project: Through a collaboration with Massachusetts Institute of Technology, Harvard researchers are exploring ways to facilitate and accelerate measures to reduce the risks of a changing climate that require international cooperation. The project is focusing on policy, institutional design, and geopolitical strategy that would inform politically viable, coherent approaches to the intersection of climate and international economic policy, including on supply chains, tariffs, carbon border adjustments, and climate finance for developing countries. The Accelerator is working to identify current and former government ministers, as well as critical stakeholders, who will inform the research agenda and partner with experts to disseminate findings, including a series of policy briefs to be published by early 2025.

Zero-carbon transportation: The Accelerator is supporting Harvard researchers who are working through challenges in the deployment of electric vehicle infrastructure and the electrification of heavy-duty trucks. The Accelerator has convened stakeholders around these issues periodically, including a meeting co-organized with the Environmental Defense Fund.

Tax reform in 2025: Harvard researchers are working on developing new policy tools to reduce carbon emissions, including clean energy tax credits, a carbon tax, and a carbon border adjustment mechanism. Building on meetings with Congressional staff in the spring of 2024 that focused on the tax reform agenda, the Accelerator will support this work by collaborating with other organizations, such as the Center for Climate and Energy Solutions, Electric Power Research Institute, the Climate Solutions Fund, and Resources for the Future. The Environmental and Energy Study Institute is also interested in working with the Accelerator in organizing a series of briefings for Congressional staff.



APPENDIX ONE: 2024 CLIMATE ACTION ACCELERATOR CONVENINGS

CONVENINGS	OUTCOMES	ATTENDANCE
<p>Climate Policy Dinner in Washington, DC February 27, 2024</p>	<p>Established deeper connections and relationships with members of the non-profit lobbyist community who will be key partners for the CAA's non-partisan work on advancing carbon pricing solutions in 2025.</p>	32
<p>Bloomberg Study Group on City-level Nature-based Climate Adaptation Plans March 21, 2024</p>	<p>Strengthened connections between the Trust for Public Land, Harvard Graduate School of Design faculty, and three city planners from Mexico City, St. Louis, and New Delhi on integrating nature-based adaptation into city climate action plans.</p>	35
<p>Partners in Harvard's Environmental Justice Work March 22, 2024</p>	<p>Launched a project to create a searchable database of Harvard's climate adaptation and environmental justice work with Boston-based non-profits so that practitioners from other regions can access the University's expertise. Harvard faculty from the Strengthening Communities Research Cluster are advising on its scope. The research phase of the database is now complete, and CAA is working with a doctoral student to create the database.</p>	24
<p>African Perspectives on International Climate Change Law March 29, 2024</p>	<p>Convened senior government officials, Harvard faculty, and US-based practitioners to create draft outlines for three resolutions for climate adaptation funding, technology transfer, and renewable technology deployment.</p>	28
<p>Is the Paris Agreement Working? April 4, 2024</p>	<p>Featured Cassie Flynn, Global Director of Climate Change at the United Nations Development Programme, speaking about her perspectives on the year ahead in climate policy. Harvard students and global practitioners attended the event.</p>	150



CONVENINGS	OUTCOMES	ATTENDANCE
<p>Harvard Alumni in Climate and Environment: Earth Day Happy Hour in Washington, DC April 22, 2024</p>	<p>Introduced the work of the Salata Institute and CAA to the local climate practitioner alumni community.</p>	78
<p>Direct Current (DC) Fast Charging Stakeholder Roundtable April 30, 2024</p>	<p>Convened state-level practitioners who left the workshop with actionable policy mechanisms and draft legislation that would enable greater development of electronic vehicle infrastructure.</p>	17
<p>Environmental Defense Fund + Harvard Business School Net Zero Systems Solutions: Fleet Electrification May 16, 2024</p>	<p>Generated actionable next steps between industry representatives to agree on fleet electrification initiatives.</p>	26
<p>ClimaTech June 3–4, 2024</p>	<p>Featured three sets of faculty and their research in this inaugural conference focused on increasing climate entrepreneurship in Massachusetts. CAA built a closer relationship with the Office of the Governor and the Secretary of Economic Development.</p>	100+
<p>Harvard at Climate Week NYC September 24, 2024</p>	<p>Harvard’s first coordinated appearance at Climate Week NYC lifted the Salata Institute brand awareness and shared the work of three research clusters with a wider practitioner audience.</p>	291
<p>The Future of US Climate and Energy Policy November 19, 2024</p>	<p>Closed-door session with Harvard faculty, bipartisan members of Congress, and Congressional staff about policy options for climate energy under the Trump Administration.</p>	75



APPENDIX TWO: SEED GRANT PROGRAM RECIPIENTS 2023–24

PRINCIPAL INVESTIGATORS	SCHOOLS	PROJECTS
JULY 2023		
Carlos A. Argüelles-Delgado	FAS	Improving Ice Flow Models with a Cubic Kilometer of Instrumented South Pole Ice
Martin Bechthold	GSD	Carbon-Negative Building Insulation: Algae Foam
Joe Blatt AB '70, EdM '77	HGSE	Making the Case Communicating the Benefits of Climate Change Action
Rema Hanna	HKS	Take-Up and Impact of Electricity Subsidies in the Developing World: Evidence from Indonesia
Gage Hills	SEAS	Quantifying the Embodied Footprint of Future Computing Systems
Vijay Janapa Reddi	SEAS	Enhancing Campus Sustainability: Unlocking Efficiency with Embedded Machine Learning for Building Intelligence
Frank Keutsch	SEAS	Blending Wildfire Observations with Numerical Modeling: A First Step Toward Linking Wildfire Science with Policy and Public Health
Michèle Lamont	FAS	Recognition and Climate Change: A Comparative Study
Megan Murray MD '90, SD '01	HMS	Collaborative Workshop: Building Climate Resilient Health Systems for Vulnerable Populations
Holly Samuelson	GSD	A New View on Window Design: How Revised Glass Requirements Could Shift Electricity Demand to Times of Solar Generation and Ease the Threat of Winter Peaks
Karen Thornber PhD '06	FAS	Narrating Climate Change, Mental Health, and Inequality
Stéphane Verguet	HSPH	Setting Health Priorities in a Warming Climate: Identifying Pathways to Low-Carbon, High-Value Health Care in Low- and Middle-Income Countries
Amy Whitesides MLA '12	GSD	Toward a National Agro-Forest
Gu-Yeon Wei	SEAS	Carbon Facts: Counting and Reporting Embodied Carbon, from Theory to Practice
DECEMBER 2023		
Joanna Aizenberg	SEAS	Liquid Windows for Universal Indoor Sunlight Management
Ann-Christine Duhaime	HMS	Health Effects of Peaker Power Plant “ON” vs. “OFF” states—Assessing Benefits of Peak Demand Alternatives in a Large Urban Health Network
Richard Liu AB '15	FAS	Light-Switchable Materials for CO ₂ Capture and Release
Kaighin McColl	FAS/SEAS	Creating a Land Climate Community
Yi-Qiao Song	SEAS	Study of the Chemical Reaction of Water and Mafic Rocks to Produce Green Hydrogen, a Potential Clean Primary Energy Source



PRINCIPAL INVESTIGATORS	SCHOOLS	PROJECTS
FEBRUARY 2024		
Michael Aziz PhD '84	SEAS	Redox-Mediated Salt Splitting for Direct Air Capture of Carbon Dioxide
Adrien Bilal	FAS	Workshop: The Macroeconomic Implications of Climate Change
Andrew Davies	FAS	Quantifying the Magnitude of Zoogeochemical Effects on Vegetation Carbon Stocks
Peter Huybers	FAS/SEAS	Workshop on Climate Change and Volatility in Food Supply
Michael McElroy	SEAS	International Workshop on Climate-Resilient Development in Southeast Asia
Gerald Neuman AB '73, JD '80	HLS	African Perspectives on International Climate Law: A Symposium
Benton Taylor	FAS	The Changing Composition of Soil Carbon Inputs: Root Exudate Responses to Climate Change
Hannah Teicher	GSD	Adaptive Climate Migration: A Case Study of Resettlement from the Solomon Islands to Canada
JULY 2024		
Sharon Block	HLS	Labor in the Just Transition
Kristen Stilt PhD '04	HLS	Workshop: Climate Change and Rights of Nature
Carole Voulgaris	GSD	Analyzing Zoning Codes to Identify Sustainable Locations for New Housing
Charles Waldheim	GSD	A Performance Evaluation Methodology for Nature-Based Adaptation Solutions
David Weitz PhD '78	SEAS	From Waste to Taste: High-Throughput Screening for Microbes to Transform Dairy Waste into Sweet-Tasting Proteins as Novel Sugar Alternatives



