Columbia Business
The Magazine of Columbia Business School
Summer/Fall 2025

Nuclear Innovators Shaping Clean Power

Financing the Next Climate Frontier

Trailblazers of the Climate Economy

How CBS alumni and faculty are driving innovation across the clean energy landscape.


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Summer/Fall 2025

In this issue

ColumbiaBusiness

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In keeping with our commitment to the environment, this magazine was created in an ISO 14001 facility certified for environmental management using 100 percent alternative energy. The paper is sustainably manufactured using recycled water and renewable energy, and it is certified by the Forest Stewardship Council.® The inks used are soy based or 99.5 percent VOC-free.

At the Frontier of Climate Innovation

The changing climate is reshaping the world around us–and with it, the role of business. What was once mainly seen as an environmental challenge is now recognized as a defining opportunity for innovation, investment, and leadership. Across industries and disciplines, forward-thinking companies are finding that the future belongs to those who can align sustainability with strategy, harness technology for environmental impact, and create long-term value for shareholders and society.

Today, we stand at the forefront of this pivotal transformation. Technology, data, and human ingenuity are converging to open new frontiers for climate solutions–and Columbia Business School is proud to be at the heart of these efforts.

In this issue of *Columbia Business*, we highlight how CBS faculty, alumni, and partners are driving change at the intersection of technology and sustainability. Our cover story spotlights a rising generation of CBS entrepreneurs tackling climate innovation—from EV infrastructure and carbon markets to sustainable agriculture and circular materials. These leaders are translating climate ambition into action, reflecting the impact-driven spirit of the CBS community. And they are doing so with strong business models that lead to financial success, support economic growth, and enhance our long-term competitiveness and economic position in this area of change.

At the same time, the Tamer Institute for Social Enterprise and Climate Change is helping to shape the field through its Climate Knowledge Initiative. CKI provides leaders with reliable, data-driven information on affordable low-carbon technologies, business transition models, and successful implementation strategies across industries. Building on our School's legacy of rigorous research and real-world impact, CKI is fostering collaborations with industry leaders and policymakers to provide them with the actionable knowledge needed to pick investable and scalable green technologies.

CBS faculty across disciplines–from macroeconomics and finance to marketing and real estate–are also generating powerful research that informs business models, financing solutions, and strategies that support successful business solutions that can drive change in the global transition to a low-carbon economy.

Our curriculum reflects this critical moment and responds to strong student interest. CBS courses integrate climate risk, sustainable finance, and data-driven environmental analysis, preparing students to lead through the climate transition, identify strong business opportunities, and build a foundation that will prove useful over the arc of our students' professional careers, which will span the next several decades. This is bolstered by our incredible events lineup, which has featured insight from leaders in the climate and sustainability space, such as Nike Chief Sustainability Officer Jaycee Pribulsky '01, TerraPower CEO Chris Levesque, and Commonwealth Fusion Systems CEO Bob Mumgaard, with the latter two reviewing the state of play in nuclear fission and fusion technologies.

Success in the era of climate change will demand visionaries who can bridge the gap between science and strategy, harness new tools like AI to model risks and opportunities, and inspire organizations to pursue both profit and sustainability and more precisely achieve sustainability while focusing on robust business models that pursue their long-term profitability. The businesses that will thrive in the decades ahead must actively create value by aligning with the realities of a changing planet.

Throughout this issue, you will read stories of faculty research, alum ventures, and institutional initiatives that showcase the power of business to unlock opportunity and be a force for good. You will also see how data, AI, and emerging technologies are accelerating the pace of climate innovation.

Thank you for joining us on this journey. We hope this issue inspires you to imagine–and to help build–a world where business and our climate thrive together.

Costis Maglaras
Dean, Columbia Business School
David and Lyn Silfen Professor of Business

Professor Gernot Wagner leads a CKI workshop at Columbia Business School's Manhattanville campus.

Closing the Climate Knowledge Gap

By pairing research with compelling media, Columbia Business School's Climate Knowledge Initiative is helping climate innovations reach the boardroom and beyond.

BY JONATHAN SPERLING

When Columbia Business School Professor Gernot Wagner found himself standing on the factory floor of a cement startup, it wasn't a typical day for a climate economist.

Alongside Emmy-winning *60 Minutes* producer David Gelber—co-creator with Joel Bach of the climate documentary series *Years of Living Dangerously*–Wagner was filming a series of short documentaries aimed at bringing the next generation of climate solutions to life.

Wagner's work comes at a time when the climate policy pendulum is swinging back hard in Washington, DC, and beyond. These policy uncertainties magnify the already daunting challenges facing many business leaders: navigating the complexities

of climate technologies, economic models, and the implementation strategies needed to adapt their business strategies to the many climate risks companies face.

Enter CBS Climate Knowledge Initiative (CKI), which was launched to close that gap—fast. The initiative, supported by the School's Tamer Institute for Social Enterprise and Climate Change, provides business leaders with the curated, actionable knowledge to pick investable and scalable green technologies while unapologetically flagging areas where business and public interests diverge.

Launched in 2024, CKI is translating technical climate knowledge into something rare in today's fragmented sustainability landscape: clear, investable, and actionable insights.

> "CKI's mission is to translate technical knowledge–the sort of thing universities typically focus on–into useful, investable, scalable information."
>
> **Professor Gernot Wagner**

"CKI's mission is to translate technical knowledge—the sort of thing universities typically focus on—into useful, investable, scalable information," says Wagner, CKI's faculty director. His on-the-ground work is just one example of how CKI is trying to get valuable climate solutions and data in front of leaders who can make a difference.

Aside from distilling research into accessible case studies and media, CKI also identifies and engages with startups and industry stakeholders through formal events. All these efforts serve to accelerate the development and deployment of lower-emission climate technologies that can replace incumbent, high-emissions systems within the next decade.

An Industry Catalyst

Tackling key, high-emission sectors can have an outsized impact on solving the climate crisis and that begins with getting information in front of these sectors' leaders. While access to high-quality data on climate technology is often costly for businesses, CKI offers a unique open-access model: Its background decks, abbreviated business case studies, and key insights are all available free of cost. The model is woven into the fabric of the Tamer Institute's core mission, which is to educate business leaders looking to address social and environmental challenges.

"CKI's mission is very much unique within academia. This is rigorous research conveyed in easily digestible formats, including the sort of decks you'd expect from top management consultancies," Wagner says. "This is not something typically accessible without paying for it."

CKI's case-study approach allows academia to drive action. Take the cement sector, one of the most carbon-intensive industries on the planet, for example. Early in its creation, CKI convened a workshop bringing together leaders from startups like Brimstone and Sublime Systems with executives from global incumbents like Cemex. That workshop informed not just an internal knowledge exchange but a suite of public-facing materials, such as an MBA case study published in the *Financial Times*; three videos with the YEARS Project, a nonprofit media organization focused on climate storytelling; and a multi-slide investor summary deck—all aimed at accelerating adoption and understanding across stakeholder groups.

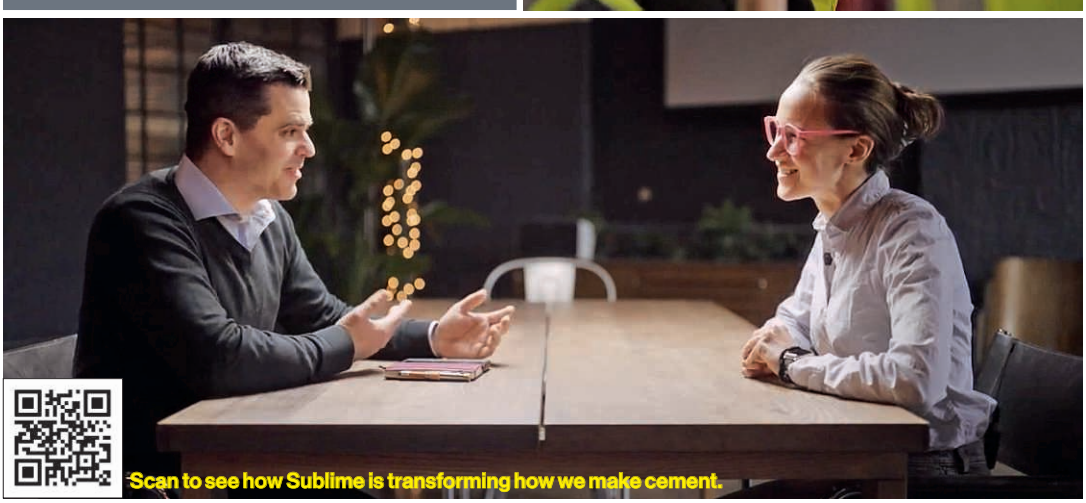
This full-spectrum storytelling—from boardroom briefings to classroom discussion to media amplification—makes CKI unique. The initiative not only identifies promising solutions but also the connective tissue that helps those solutions to scale.

On Location

On the road, in factories, and inside the laboratories of climate startups lies one of CKI's most ambitious storytelling efforts to date. It is there that Wagner traveled to alongside Gelber to produce

Cement for the Modern World

Professor Gernot Wagner and Leah Ellis, CEO and co-founder of Sublime Systems, tour the facility where the company produces low-carbon cement. Using electrochemistry, Sublime extracts reactive calcium and silicates from abundant raw materials, then blends them into its signature Sublime Cement.

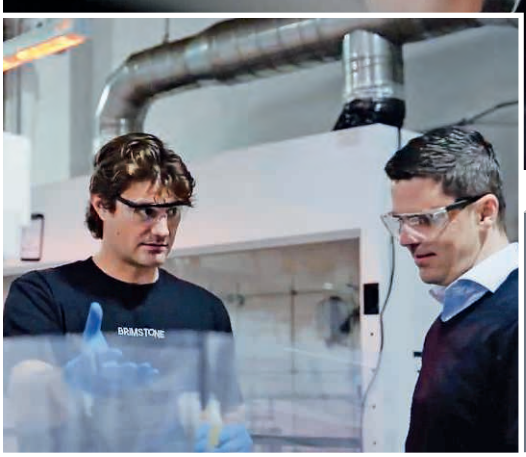


Scan to see how Sublime is transforming how we make cement.

a new series of short documentary films aimed at bringing the most promising climate solutions to life on screen—and in front of the leaders who have the power to make a change.

Each short film offers a vivid, accessible look at high-potential startups working in hard-to-decarbonize sectors. The first two installments feature Brimstone and Sublime Systems, two companies developing radically cleaner ways to produce cement. A third video spotlights Stegra, a Swedish startup aiming to reinvent steel manufacturing.

The video series reflects CKI's broader strategy: meeting different audiences where they are. While slide decks and case studies effectively reach industry insiders and decision-makers, these short films speak to a broader group of public-business leaders, policymakers, and general audiences hungry for solutions.



From Concept to Concrete

Professor Gernot Wagner meets with Cody Finke, CEO of Brimstone, to discuss the company's breakthrough in low-carbon cement. The conversation reflects CKI's focus on surfacing scalable solutions in hard-to-decarbonize industries.

Scan to watch how Brimstone is reinventing cement.

The featured startups emerged from CKI's rigorous research pipeline, having first been vetted through sector-specific workshops and structured analysis. This multi-format approach isn't just about education—it's about acceleration. By connecting high-quality research with effective storytelling, CKI aims to shape investment flows, influence corporate strategy, and inform public policy. It's a model that treats storytelling not as an afterthought but as a strategic tool for change.

As CKI continues to work with influential stakeholders, the films help define what a modern, mission-driven academic initiative can look like: rigorous, credible, and unafraid to speak to a wider world. Unlike any other academic initiative of its kind, however, CKI's success hinges on making itself obsolete.

> "CKI's mission is very much unique within academia. This is rigorous research conveyed in easily digestible formats—including the sort of decks you'd expect from top management consultancies. This is not something typically accessible without paying for it."
>
> **Professor Gernot Wagner**

Working Toward Obsolescence

The stakes of CKI's work are nothing short of monumental. The cement industry alone, for example, must replace 3,000 highly polluting kilns to go from being responsible for almost 10 percent of global annual carbon emissions to being part of the solution. That kind of transformation requires an unprecedented speed of technology adoption—and every year counts.

CKI is playing a huge role in that effort by identifying technologies on the cusp of commercialization, convening key stakeholders, and creating knowledge products that help both incumbents and innovators move faster. Whether it's connecting startup founders with Fortune 500 CFOs at industry workshops, producing captivating media content, or educating the next generation of climate finance leaders, CKI is focused on catalyzing action at every level.

In the immediate future, Wagner hopes CKI becomes deeply embedded in the most pivotal climate sectors—cement, steel, aviation, and agriculture—and technologies from solar and batteries to geothermal and nuclear, playing a key role in steering pivotal investments into real solutions.

By the end of the next decade, however, if all goes according to plan, CKI will have worked itself out of its current mission. The innovations it champions today will be mainstream, the investment pathways well-worn, and the public's understanding far broader. CKI's legacy will not be in its longevity but in the momentum it helped create, says Wagner.

That is because impact is measured differently for CKI. In how quickly critical climate technologies can move from niche innovations to global standards. In how many billions of dollars are redirected toward scaling up solutions like low-carbon cement, green steel, and next-generation batteries. In whether the world can stay on track to meet its climate goals by the middle of the century.

"We need to move quickly, much quicker than today," Wagner says. "None of it is *if*; it's all about the *when*."

This fact is perhaps what sets CKI apart from the most traditional academic initiatives—its success is designed to make itself unnecessary. For Wagner and the CKI team, the program is not looking to build permanence, but rather it's building a bridge to a future where its work is no longer needed.

Scan to watch how Stegra is reimagining steel for a decarbonized world.

Clean Energy Means More Green for American Workers

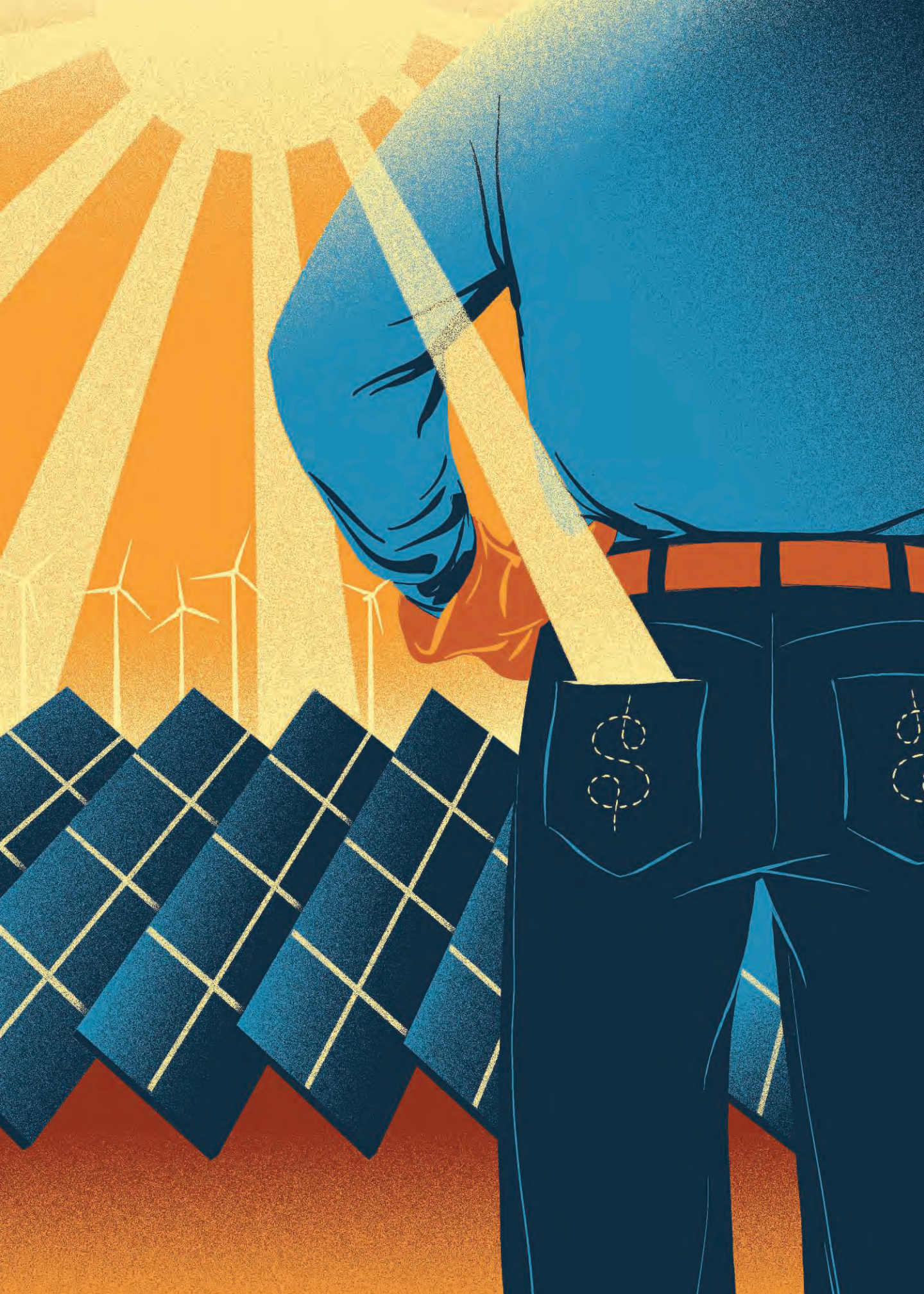
Research by Professor Conor Walsh reveals the potential benefits of transitioning to a renewable energy grid.

BY WILLIAM WHITMIRE AND ROLAND WYN JONES

When a solar farm opens in Texas or California, it can spark more than clean power. It may also signal the start of local economic growth.

As the US clean energy transition gains momentum, driven by falling costs and better technology, new research from Columbia Business School finds a major potential upside: higher wages for American workers.

In "The Economic Impacts of Clean Power," Columbia Business School Assistant Professor Conor Walsh and Yale Professor Costas Arkolakis explore how a shift to wind- and solar-powered electricity affects the US economy.



Conor Walsh, assistant professor of business

Using a detailed model of energy pricing and infrastructure investment, they estimate that by 2040, wholesale electricity prices could drop by 20 to 80 percent, depending on regional access to renewables. These energy savings could raise wages by 2 to 3 percent nationwide and up to 5 percent in areas rich in sun and wind.

The economic gains would come not just from lower electricity costs but from how those savings ripple through the economy.

"Clean energy is not just an environmental solution—it's also a powerful economic driver," says Walsh. When energy costs fall, businesses become more profitable and expand hiring. The resulting boost in labor demand pushes wages higher.

The researchers' model links regional energy prices with productivity and employment, showing that clean energy drives wage growth across industries, not solely in the energy sector.

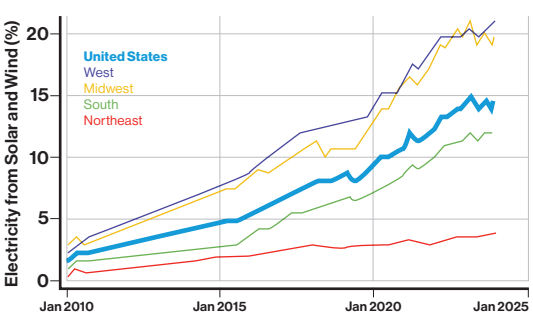
These effects are strongest in regions with abundant renewable resources. Low-cost energy gives firms a competitive edge, which spurs job creation and higher pay.

Walsh and Arkolakis accounted for differences in resource availability, infrastructure, and local economies to estimate how various regions would respond to the energy transition. While most areas see gains, the largest benefits go to the sunniest and windiest parts of the country.

Lower energy costs benefit consumers and businesses alike, cutting bills and raising profits. For policymakers, the research shows that clean energy is more than a climate solution. It's also a smart economic strategy.

The study also factors in the cost of building clean energy infrastructure. With ongoing declines in the cost of solar, wind, and grid technologies, the

The Renewable Transition in the US



Solar and Wind Share in Electricity Generation

“Clean energy is not just an environmental solution –it’s also a powerful economic driver.”

Conor Walsh, assistant professor of business

researchers conclude that upfront investments will pay off through broad energy savings.

These insights come at a pivotal time. As the United States scales back federal climate policies, much of the momentum for renewables is now market-driven. The research reinforces that, even without strong mandates, the economic case for clean energy remains compelling.

Walsh and Arkolakis note that targeted policy support, such as investments in workforce training and grid upgrades, could amplify these benefits and help ensure rural and underserved communities share in the gains.

With the right policies and investments, the clean energy transition could become an engine for economic growth and an opportunity to include communities that have been left behind.

For business leaders, policymakers, and local organizers, the message is clear: Clean energy is more than an environmental goal. It’s a pathway to shared prosperity.

Adapted from the paper “The Economic Impacts of Clean Power.”

Key Takeaways for Business Leaders

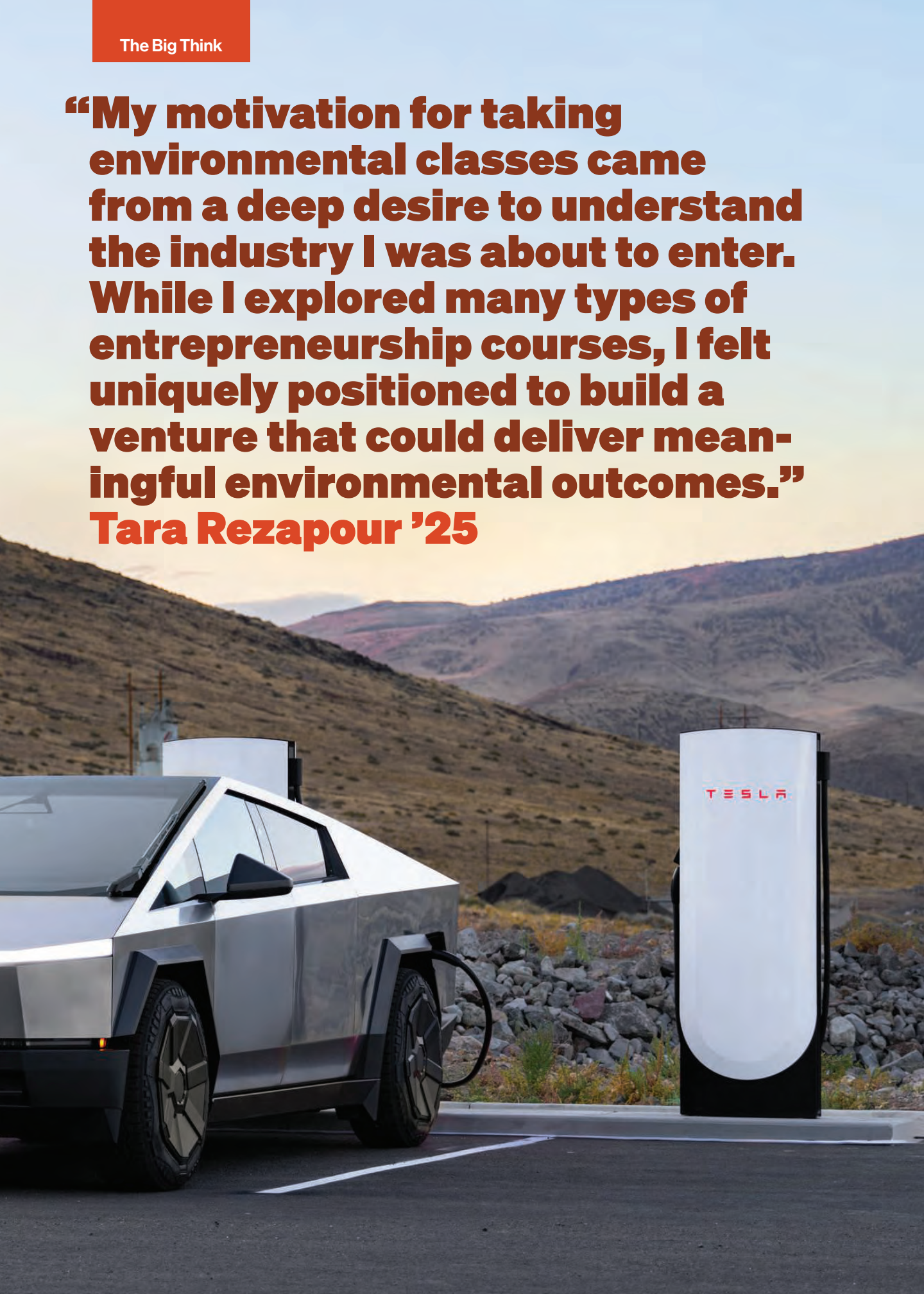
1. The shift to renewable energy boosts profitability and job creation, making it a vital economic driver alongside the benefits to the environment.
2. Companies in regions with abundant renewable resources can lower their energy costs, potentially leading to higher wages and competitive advantages.
3. Upfront investments in clean energy infrastructure can yield long-term savings. Supporting workforce development ensures equitable benefits across communities.

Trailblazers of the Climate Economy

Columbia Business School entrepreneurs are charting new territory in climate innovation. These pioneers are forging bold solutions, driving growth, scaling impact, and reshaping the path to a sustainable future.

BY ELAINE POFELDT | ILLUSTRATIONS BY ALEX NABAUM

“My motivation for taking environmental classes came from a deep desire to understand the industry I was about to enter. While I explored many types of entrepreneurship courses, I felt uniquely positioned to build a venture that could deliver meaningful environmental outcomes.”
Tara Rezapour ’25



Bullet Energy Solutions is on a mission to make it easier to switch to an electric car. Its goal: to become the leading installer of EV chargers and infrastructure coast to coast.

The Austin, Texas-based company got its start after Allen Rezapour, the firm's CEO, sold his company, Fox Rent A Car, to European car rental Goliath Europcar in 2019. Over 35 years prior to the acquisition, he and two partners built Fox into the largest independent car rental company in the United States.

At the time of the sale, Allen, an electronics engineer by training, was looking for a way to use what he had learned in the car rental business to help the environment. He also wanted to create a business that his children could run someday. Following in her father's footsteps, his daughter Tara Rezapour '25 entered Columbia Business School through the J-Term MBA, a 16-month option heavily attended by students with a family business background.

Allen teamed up with Andres Pinter '03 and Mark Vogel, a partner and veteran solar industry executive who had worked in the renewables space since 2013. Eager to capitalize on the EV charging boom, the trio founded the company in 2022 (Pinter became a senior managing director at a business consultancy in late 2024).

To generate revenue in its early days, Bullet focused on installing solar panels and battery storage systems for residential customers. Meanwhile, its team conducted feasibility and competition studies for the EV installations it planned for the future. "Allen and I probably spent six months doing due diligence prior to even starting the company," recalls Vogel, COO.

Through Vogel's industry relationships, Bullet partnered with a third-party company that had secured master service agreements with most of the major automakers manufacturing EVs. When customers purchased one of their vehicles, Bullet had the opportunity to bid on the installation of the charging stations.

The business took off quickly, and the company now installs both residential EV chargers and commercial EV superchargers. Bullet plans to expand nationally after establishing a presence in Arizona, California, and Colorado. With 42 employees, it now projects about $10 million in revenue for 2025 and just posted its first profitable quarter in Q1. "It's a huge milestone for us," says Vogel.

Meanwhile, Tara powers the company's business development as head of marketing, tapping what she learned at CBS about scaling a sustain-

able business. She was very involved in the School's Family Business Club and took family business courses with professors such as Senior Lecturer Gaia Marchisio along with environmental classes.

"My motivation for taking environmental classes came from a deep desire to understand the industry I was about to enter," she says. "While I explored many types of entrepreneurship courses, I felt uniquely positioned to build a venture that could deliver meaningful environmental outcomes."

Bullet is mostly self-funded for now, but an early sign of its potential to attract interest from investors came when Tara's classmate Pedro Pablo Scarpetta '24 pitched it in CBS's Investing in Social Ventures class in fall 2023 and won. That paved the way for the company to receive funding through the Tamer Fund for Social Ventures (TFSV) at the Tamer Institute for Social Enterprise and Climate Change. The TFSV provides seed grants to nonprofit, for-profit, and hybrid early-stage Columbia University-affiliated social and environmental ventures. (Application deadlines are March 1 and August 15.)

These days, Bullet is working to differentiate itself with its data systems.

"We prioritize having complete dashboards daily—tracking labor, fuel usage, product purchases, and every critical detail," says Allen. "Building a data-driven culture from the start is key to scaling and running a business effectively."

Climate Innovators Make Their Mark

Bullet Energy Solutions reflects the new wave of climate innovation startups emerging from the CBS community and beyond—ventures grounded in strong business fundamentals and built for scale. As the demand for clean, reliable infrastructure grows, and the urgency around climate solutions intensifies, student- and alumni-run companies like Bullet are turning bold ideas into operational reality.

And that is by design. CBS now prepares *all* its business school students to think about climate and consider a career built around climate innovation, whether as entrepreneurs, investors, or policy leaders. However, even if they don't pursue a career that is directly related, they will be well-versed on climate considerations and able to bring that to whatever work they choose to do.

"Over the next several decades, the impacts of climate change will be felt by nearly every business everywhere on this planet," said Bruce Usher, the Elizabeth B. Strickler '86 and Mark T. Gallogly '86 faculty director at the School's Tamer Institute for Social Enterprise and Climate Change, speaking at the annual Tamer Institute Awards Breakfast, held this year on Earth Day. "This means the opportunities for businesses to create value by tackling climate change are vast, disruptive, and growing."

Against that backdrop, learning how to maximize returns and minimize threats will be essential, according to Usher. "Climate change creates new and growing risks that will separate the best-run companies from the rest," he said.

Despite a reversal of policy support in Washington, DC, more corporate decisions to deemphasize net-zero pledges, and a pullback by investors in climate tech, Usher said Columbia does not plan to scale back its commitment to climate innovation, viewing it as a long-term strategy. "We teach skills not just for the next four years but for the next four decades," he said.

Tamer Institute Fuels Climate Startups

The Tamer Institute plays a crucial role in supporting that commitment. Its programs empower students with the business knowledge and skills in entrepreneurship and management they need to find creative new solutions to social and environmental challenges.

The TFSV has backed a variety of climate-tech startups from the university community, some of which also tap into the resources of the Eugene M. Lang Entrepreneurship Center.

"Over the past decade, the Tamer Fund for Social Ventures has supported 29 climate- and sustainability-focused ventures spanning sectors like clean energy, circular economy, sustainable agriculture, water innovation, and climate finance," noted Usher, who serves as chair of the Tamer Fund. "Making up about half of the fund's portfolio, these ventures demonstrate how Columbia-affiliated founders are driving real-world impact."

Usher pointed to Kheyti, a startup that has developed a greenhouse-in-a-box solution that is helping small farmers in India reduce climate risk and increase crop yields. Co-founded by Kaushik Kappagantulu '17 and backed by the Tamer Fund in 2016, the company received the 2022 Earthshot Prize for Protect and Restore Nature from His Royal Highness Prince William, The Prince of Wales, and the U.K. Royal Family Foundation. The company aims to reach 50,000 small farmers by 2027.

“Over the next several decades, the impacts of climate change will be felt by nearly every business everywhere on this planet. This means the opportunities for businesses to create value by tackling climate change are vast, disruptive, and growing.”
Professor Bruce Usher

Among other promising ventures backed by the Tamer Fund are:

- **Plentify**, a provider of smart energy solutions, including a smart solar water heating service aimed at clients in African cities, founded by Jon Kornik ’11.
- **Sortile**, which has brought a technology to the textile industry that enables the identification, sorting, and traceability of textiles. Founders Constanza Gomez ’22 and Agustina Mir, SIPA’21, met while studying at Columbia.
- **Tough Leaf**, a climate-adjacent startup that connects construction contractors, including those working on climate-resilient projects, with minority-owned and small businesses to foster more equitable contracting. Wissam Akra ’22 received funding from the Tamer Fund and won the 2025 Tamer Alumni Innovator Award.

On campus, the Tamer Fund has catalyzed a culture of climate entrepreneurship, encouraging students and alumni to develop scalable solutions and innovations in climate investing as well. There has been an overall increase in applications related to climate over the past four to five years, including AI-native startups such as Giraffe Bio, which developed an AI-powered method of metal extraction, and Terralytiq, a decarbonization partner for large supply chains.

All these startups are part of an international business ecosystem of companies that prioritize climate innovation, one that also includes the larger, scalable companies CBS is preparing leaders to build and run. The Tamer Institute helps students enter that world equipped with a clear grasp of climate-related issues by supporting new ideas from

both faculty and industry leaders as well as innovative curricula like the Investing in Social Ventures Course and extracurricular activities for students.

One example is the Tamer Institute's Three Cairns Fellowship, endowed by Elizabeth Strickler '86 and Mark Gallogly '86 from the mission-driven investment and philanthropic firm Three Cairns Group. The fellowship offers support to MBA and Executive MBA students who complete semester- or year-long projects at the intersection of climate change and business. Students often pursue projects while working with Columbia researchers or outside companies and organizations that address sustainability and climate change.

The Tamer Institute has made careers in climate innovation and social entrepreneurship more feasible for many students by providing additional funding to the Loan Assistance Program, which alleviates the burden of student loan repayment for students pursuing careers in public service and the nonprofit sector. The program was made possible by a gift from the Class of 2005, and originated from the Guenther Family Public and Nonprofit Assistance Grant, a program established in 1998 that awarded post-graduation grants to MBAs entering the public and nonprofit sectors. The institute has expanded the availability of the Social and Environmental Summer Fellowship to Columbia students outside of CBS, funded social ventures at the Columbia Startup Lab, and contributed to the development of Columbia's advisory network for social entrepreneurs.

The founding of the Tamer Institute and the recent expansion of its programs embody a long, university-wide commitment to social ventures and climate change. In 1981, Ray Horton, Frank R. Lautenberg Professor Emeritus of Ethics and Corporate Governance, established the Public and Nonprofit Management Program, renamed the Social Enterprise Program in 2000, to broaden understanding of how business can contribute to society and the environment. It has since expanded its focus to social entrepreneurship, corporate social responsibility, and international development.

Pioneering Innovations in Teaching and Research

Another key driver of climate innovation is a unique curriculum designed to help students integrate sustainability into all their business activities.

Over the past decade, the climate-related course offerings at CBS have grown from only two disconnected electives with limited offerings to more than 10 courses, many with wait-lists. This significant increase in climate-related courses has been driven in part by intense student demand as well as the leadership and vision of CBS Dean Costis Maglaras. In 2019, when Maglaras became dean, he made climate and sustainability a core pillar around which to focus future CBS research and teaching.

CBS's Business and Climate Change course, taught by Usher and Gernot Wagner, a climate economist and faculty director of CBS's Climate Knowledge Initiative, signaled there was even more interest in climate innovation on campus than they originally thought: More than 500 students enrolled, and it was taught in eight sections. As part of the recently launched CBS Curriculum Pathway focused on climate, students can also take four more deep-dive electives: Climate Finance, Climate Tech, Climate Policy, and Climate Risk, among several other climate-related courses.

"Columbia Business School is now the leading academic institution in the world on the topic of climate change and business," Usher said at the annual Tamer Institute Awards Breakfast on Earth Day.

Beyond CBS, Tamer's Open Climate Curriculum initiative aims to accelerate the teaching of climate change globally. Introduced by Usher in 2023, the initiative brings together faculty from universities around the world to share and create teaching materials, leveraging artificial intelligence.

Beyond academics, the Tamer Institute focuses on thought leadership in climate change. One example is the annual Climate Business and Investment Conference, held on May 2 this year.

To meet the needs of current business leaders, the Tamer Institute supported the launch of the Climate Knowledge Initiative (see "Closing the Climate Knowledge Gap" on p.4), under which students contribute to research on promising startups. Their work is highlighted for future investors and sometimes turned into case studies for CaseWorks, which develops teaching materials for CBS classrooms.

Students who take advantage of CBS's many climate-related offerings often go on to celebrated careers in fields such as investing, finance, and policy. One example is Ron Gonen '04, founder and CEO of Closed Loop Partners, a New York-based investment firm and innovation center focused on building the circular economy.

Another is Courtney Thompson '17, managing director and head of sustainable products and solutions in Morgan Stanley's global sustainability office, who spoke at the conference. In her role, she

“Through scholarship and through our ability to bring and convene people—this is how the Tamer Institute actually moves the needle. It is truly a gem. It is unique in how impactful and successful it is, it is unique within our School, and it is unique within the University and within the Academy.”
Dean Costis Maglaras

leads the bank in navigating the many complexities of financing nature-based solutions that are involved in conserving and restoring landscapes, sustainably managing forests and other resources, and pollution reduction and biodiversity-loss prevention.

Morgan Stanley’s philosophy is that all investments need to be financially and climate resilient, mindful of social factors, and aware of *where* the impact of an investment will be felt, she explained. “Is it at the point of the farmer?” she said. “Or is it perhaps beyond that, until it gets to our tables and ourselves?”

CBS alumni are also making their mark in climate-related policy. Rohit Aggarwala ’00, who is chief climate officer and commissioner of New York City’s Department of Environmental Protection, oversees initiatives like Local Law 97, which sets strict carbon emissions limits for large buildings.

He spoke at the conference about overlooked opportunities to achieve climate resilience at scale—for example, working with small property owners who often get advice from plumbers unfamiliar with flood mitigation (see “How Climate Is Reshaping Real Estate” on p. 40).

Aggarwala believes it will take time to educate providers on how to do such jobs properly, just as it took decades for the energy-efficiency sector to evolve after the 1970s energy crisis: “We’re going to need that same transition for resilience.”

ABOVE: Courtney Thompson '17, managing director and head of sustainable products and solutions in Morgan Stanley's global sustainability office, speaking at the 2025 Climate Business and Investment Conference.

He also emphasized the need to ensure that properties such as lower-income coops can comply with relevant laws. "It's often the most vulnerable communities, with the fewest resources, that now face the highest costs to comply with the law," Aggarwala said.

With CBS more committed than ever to climate innovation, and with the Tamer Institute supporting it, CBS alumni will continue to play a leading role in shaping the business world's climate solutions for decades to come. Its distinctive approach to climate innovation and deep commitment to impact is preparing a new generation of leaders to drive solutions at scale.

As Dean Maglaras put it, "Through scholarship and through our ability to bring and convene people—this is how the Tamer Institute actually moves the needle. It is truly a gem. It is unique in how impactful and successful it is; it is unique within our School, and it is unique within the University and within the Academy."

Climate Connections

The Climate Practitioners Network connects alumni across fields to invest in solutions, mentor students, and share what works.

Ron Prashker '04 is a partner, investor, and board member at Salcheto Winery, which uses biodynamic farming to cultivate its crops in Tuscany, Italy, and distributes its wines through Whole Foods and other outlets.

One point of pride is that Salcheto has become the model for a sustainable winery certification, which has been adopted by approximately 500 wineries. "We were the first in a lot of areas around climate and sustainability," he said at a luncheon for the Climate Practitioners Network (CPN) at the Climate Business and Investment Conference.

Prashker and his co-investors are seeking another investment round to fund a rollup of sustainable wineries. The challenge, he said, is balancing sustainability considerations, including creating good jobs, with economics: "You can't do all of these things if you can't survive."

He is one of many alumni who have become active participants in the CPN. The network took shape two years ago when the Tamer Institute identified a need to bring together alumni in the field, recounted Allison Kline '20, senior associate director for network engagement at the Tamer Institute. After conducting more than 50 one-on-one interviews with alumni, Kline and her colleagues began rolling out opportunities for alumni with shared goals around climate change to connect, crossing the boundaries of different professional fields. CPN's work has included both in-person events like the CPN luncheon and a newsletter to keep alumni updated on relevant opportunities.

"Given the urgency of addressing climate change in the business community and how rapidly the Tamer Institute is expanding our offerings in climate for current students and for the public through the Climate Knowledge Initiative, it seems like a really important time to more strategically address that question and think about how to engage our alumni," Kline said.

“Think about that 20- to 30-year-old in your life. Ask them the hard questions. Ask them what they want to see in the world. Tell them that it’s possible, and tell them that we can build it together.”
Drew DiPrinzio ’25

Investors are an important part of the group. Andrea Turner Moffitt ’07, a member of the Tamer Institute’s advisory board, has been an active connector in the network, and many other investors attend events to network and scout for deals.

“Private capital has to step up,” said Diane Keefe ’84, who attended the CPN lunch to scout for investments. One of her recent investments was in Knip, a startup that develops an additive for aquaculture that reduces disease in fish populations, with the goal of making the field more sustainable. “So many of the economies in the world are reliant on fish,” she said.

The network has attracted alumni in highly specialized fields as well. Eric Pitt ’04, chief commercial officer at Emergent, attended the luncheon with an eye on finding the right partners to fight deforestation. Emergent works with developing countries that have tropical forests and the private sector to arrange large-scale transactions of carbon credits.“There is a critical mass of companies and governments that are really committed to the issues, so coming to an event like this provides a sense of opportunity,” he said.

For many alumni in the network, connecting with students is the primary goal. Alumni practitioners return as career advisors, mentors, and guest speakers, sharing their experiences to encourage the next generation of climate talent. Among the most active are David Wei ’19, vice president of finance and operations at SolarKal (led by founder and CEO Yaniv Kalish ’12), and Wendy De Wolf ’18, who founded renewable energy startup East Light Partners while at CBS and is now co-founder and president of Reservoir Partners. Wei and De Wolf also share a formative experience: Both participated in the inaugural cohort of CBS’s Three Cairns Fellowship.

The student-run Green Business Club, meanwhile, brings together the next generation of leaders in climate innovation and actively invites alumni participation. This year, the club was led by co-presidents Drew DiPrinzio ’25 and Abby Trusler ’25, who accepted the 2025 Carson Family Changemaker Award in recognition of their extraordinary impact in running the club.

As he accepted the award, DiPrinzio called for mentorship, along with optimism. “Think about that 20- to 30-year-old in your life,” he said. “Ask them the hard questions. Ask them what they want to see in the world. Tell them that it’s possible, and tell them that we can build it together.”

Trusler stressed that a focus on moving ahead is more important than ever: “This moment in our country calls for ambition, resilience, and the belief that progress is still within reach.”

The New Climate Imperative

In a series of op-eds for Earth Day 2025, Columbia Business School professors explain why educators, companies, and business leaders must adapt or fall behind.

PROFESSOR BRUCE USHER

Climate Change Must Be Core to Business Education

Climate change is reshaping global markets—and business schools must adapt. Professor Bruce Usher explains why climate literacy is critical for future business leaders and how MBA programs are evolving to meet this challenge.

Climate change is no longer just an environmental concern; it's a business reality. No CEO can afford to ignore the changes taking place in our environment and the impact on the global economy.

Business schools focus on the long game, teaching skills for not just the next four years but the next four decades. MBA students don't enroll in climate courses for ideological reasons; they see an opportunity to stay ahead in a changing business landscape. That's why business schools—which traditionally focus on finance, marketing, and management—must make climate a bigger part of their programs.

> **"Climate change will shape business for decades. Future leaders need to understand both the risks and the opportunities."**
> **PROFESSOR BRUCE USHER**

Climate change is emerging as a new–and essential–topic in MBA programs, as nearly 80 percent of global greenhouse gas emissions are linked to business activities, meaning the private sector isn't just affected by climate risks; it has the power to shape the solutions. And in business, when there's a challenge, there's also an opportunity.

Companies are already seizing this opportunity. In 2024, global investment in clean energy was double the entire fossil fuel industry. And for good reason: Research from Goldman Sachs found that solar is now the cheapest source of new power generation in most countries, without subsidies. Low-cost renewable energy can now be paired with batteries to provide inexpensive power 24/7. That's why NextEra, the most valuable utility company in America, announced it will meet most of this decade's forecast growth in electricity demand with solar, wind, and energy storage.

Electric vehicles represent another massive opportunity. Industry analysts predict that EVs will soon be cheaper to manufacture than comparable gasoline-powered vehicles. As prices decline, consumers are increasingly attracted to the better performance and lower operating costs of EVs. And driving range is a fading concern. Take the Stellantis Ram 1500 Ramcharger, which reviewers are calling the "Goldilocks" electric pickup truck, traveling nearly 700 miles on a single charge.

This shift is playing out globally. Europe generated more electricity from solar and wind last year than from fossil fuels. In China, more than half of all new car sales are EVs, and more solar was installed in 2024 than the United States has in its entire history. India's solar sector achieved record-breaking growth of 204 percent last year. Kenya has incubated several of the world's most innovative off-grid solar companies and now generates 90 percent of its electricity from renewable sources. Even Saudi Arabia has a booming clean energy industry, commissioning the world's largest battery energy storage system.

But as companies embrace these opportunities, they must also address the risks that come with climate change, which creates new and growing risks that will separate the best-run companies–and their leaders–from the rest. Insurance companies that navigate wildfire and storm risk will survive and prosper, as will real estate investors that prepare for rising seas. Swiss Re and Munich Re, the world's largest reinsurers, already understand this, using risk management to minimize their losses on the devastating wildfires that swept through Los Angeles.

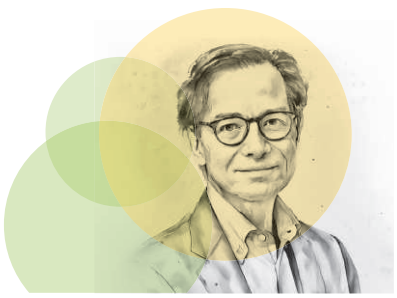
The opportunities to create value by tackling climate change are vast, disruptive, and advancing quickly. For people early in their careers, disruption creates opportunity, and growth creates wealth.

In my experience, no one enters business school hoping to work in a dying business. Success requires an understanding of the global trends that underpin growth, which is why many business schools are focusing on two trends that are certain to impact business for decades: AI and climate change. Both trends are influenced by policy, but government action–or inaction–merely affects the speed of change; it cannot reverse the direction. Climate change is heading in only one direction and will affect nearly every business, everywhere. JPMorgan recently had this to say about climate change: "Those who adapt will lead, while others risk falling behind."

At Columbia Business School, we have created the Open Climate Curriculum to share resources with other universities globally. Leveraging AI, this platform creates lesson plans using knowledge sourced in any language from any country, which proves useful for teaching the rapidly changing subject of climate change and business. Educators from more than 250 universities and colleges have already joined the platform.

Success in business comes to those who minimize risk and maximize return. My colleagues and I are teaching our students how to do that in the era of climate change. But our objective is greater than helping our students to compete and win. By acquiring the knowledge to build the low-carbon economy of the future, my students will benefit not only themselves but all of us.

Bruce Usher is a professor of professional practice at Columbia Business School and Elizabeth B. Strickler '86 and Mark T. Gallogly '86 Faculty Director of the Tamer Institute for Social Enterprise and Climate Change. He directs the development of the Open Climate Curriculum and is the author of the book *Investing in the Era of Climate Change*.



PROFESSOR ERIC JOHNSON

Why Most Americans Get Sustainability Wrong—and How to Fix It

Professor Eric Johnson explains the surprising knowledge gap for people trying to reduce their carbon footprint—and what companies and consumers can do about it.

For nearly 50 years, Americans have internalized "reduce, reuse, and recycle" for conservation. For many, the catchy slogan likely has become an underlying philosophy for their approach to protecting the planet.

But today, turning the tide on the rapidly worsening climate crisis requires a lot more than sticking to the 3 R's alone. Unfortunately, the truth is that very few people know what actions they can take to make a real impact at reducing their own emissions.

More people than ever want to do something about climate change. According to an annual survey conducted by researchers at Yale University, 54 percent of Americans are concerned or alarmed about climate change, a steady increase over the past decade.

However, if people want to make a dent in their emissions, they need to know and recognize what does and doesn't work. In a recent study, my Columbia Business School co-authors and I set out to test people's knowledge. The results were astonishing and much worse than we expected: People overwhelmingly make the wrong sustainability choices.

To ensure Americans are equipped to make sustainable choices, it's important to first clear up misconceptions about what behaviors are most effective and what industries are best and worst for the environment, then make it clear what people should be doing, and finally, find strategies to ensure people are equipped with the right tools to make a real impact.

So, what are the misconceptions? Our study quizzed thousands of Americans, asking which changes in what they do every day would lower their carbon output the most, the second most, and onward. In other words, it asked participants to rank six things they could do, from the most effective moves they can make to the least effective. We have asked these kinds of questions of thousands of people, both in the United States and other countries.

On average, Americans make several mistakes. Many believe that reducing their garbage by 25 percent would reduce their carbon footprint more than forgoing a trip between New York and San Francisco. That's wrong: Flying is about nine times worse. People on average think that recycling all their plastic is slightly more effective than cutting their meat consumption in half, but the reality is that recycling plastics is 10 times less effective.

How do we address and change this knowledge gap? Finding a solution requires understanding exactly why people make the wrong sustainability decisions. We found it's because people tend to answer tough questions by swapping an easier question. For example, when asked about the economy, people might look at their wallets.

To ensure people make the right choices, we need to make it easier for them. Economists argue that the best way to do so is by increasing prices

to reflect the emissions used to produce the goods. But we know that many people oppose this, particularly when something is labeled as a "carbon tax." Another option is to include a label telling people how much carbon is emitted when using the product. Google Flights does this today, but I suspect it doesn't help much. People don't know how to think about 0.9 metric tons of carbon dioxide equivalent (the emissions of the New York-San Francisco flight).

Products might present a Carbon Facts label like a Nutrition Facts label on food and provide a percentage of annual admissions: That single flight is about 6 percent of the average American's carbon footprint. Reducing trash for the year reduces emissions by less than 1 percent.

But we shouldn't put the burden on people alone. Companies should provide this information.

"If people don't know what really works, they can't make the right choices. That's a fixable problem."

PROFESSOR ERIC JOHNSON

Just as some people are concerned about nutrition, the majority of Americans are concerned and alarmed about climate change. If companies are listening, they should respond.

Eric Johnson is Norman Eig Professor of Business and the director of the Center for Decision Sciences at Columbia Business School. He is the author of *The Elements of Choice*.

PROFESSOR GERNOT WAGNER

Climate Change Is Both Predictable and Unpredictable. We Don't Need Certainty to Know It's a Crisis.

The unpredictability of climate disasters makes the crisis even more dangerous—not less urgent. Professor Gernot Wagner explains why embracing uncertainty should spur faster, bolder climate action.

If you knew your home would burn down exactly one year from today, you'd take immediate action. You'd clear out flammable clutter, upgrade alarms, and perhaps install fireproof doors or sprinklers. You'd also prepare for the worst—update insurance, set aside savings, and make an evacuation plan.

The human brain responds best to threats when they are clear and certain. That unfortunate truth helps explain why we're struggling to take action on climate change. Despite broad scientific consensus and growing certainty that the climate crisis will continue to worsen, there's no way of predicting how or where it will strike. Knowing the exact dates and locations of disasters may not make it any easier to prevent—but it would likely spur decisive action.

Remember Y2K, the impending doom that would befall us all when ill-equipped computer systems switched from "99" to "00" at the stroke of midnight on December 31, 1999? The threat didn't materialize, and not because it wasn't real. It had a deadline, and the world's governments and companies invested some $300 billion to $500 billion in upgrading computer systems and critical infrastructure to avoid it.

The problem with climate change, and the floods, droughts, hurricanes, and fires that come with it:

The threats are only going to get more frequent and more intense, but they are, by their very nature, erratic. As carbon dioxide crowds the earth's atmosphere, the planet not only warms but also generates weather systems that increasingly behave in unstable and unprecedented ways. *Unpredictability* will be a predictable weather watchword throughout all of our lifetimes.

It is precisely this uncertainty that makes the climate crisis so costly and even deadly. While many impacts are predictable, the exact form disasters will take remains unknown—complicating insurance and disaster preparedness. Earlier this year, fires hit Los Angeles. Next, it could be Palo Alto, Phoenix, or any number of equally vulnerable cities and suburbs, just as science long warned.

"Scientists should not be afraid to acknowledge what's unknowable about the future before us. Perhaps, if we humbly accept this uncertainty and, in fact, trumpet it as a reason to mobilize around rapid decarbonization, we can repurpose uncertainty from the barrier to climate progress that it's long been into a benevolent cudgel on the side of spurring climate action."

PROFESSOR GERNOT WAGNER

All that leads to a straightforward messaging problem with anything but an easy answer: Over the decades, climate scientists have been striving to improve on their ability to be "certain" about the causes and impacts of climate change. (For their part, IPCC reports have steadily dialed their declarations up on their own likelihood scale, achieving the Holy Grail of "virtually certain" for many key conclusions.)

But that all-too-human desire to close in on perfect certainty is causing us to miss an important point: We can never actually achieve total certitude about the shapes climate change will take, nor do we need to arrive at certitude to take action.

Nobody takes out insurance because they know their home will burn down with certainty. In fact, no insurance company would offer such an insurance policy in the first place. Every investor, actuary, or corporate risk manager understands that it is the element of not knowing that creates the impetus to invest in mitigating risks and adapting to those that remain.

Climate change is no different. Scientists have provided conclusive links between us burning fossil fuels and any number of impacts, from more intense floods and fires to lower student test scores and worker productivity on the one hand, and lower life spans and home prices on the other. All told, the social costs for each ton of carbon dioxide burned by now add up to numbers in the high $200s, with a wide range that is heavily skewed toward much larger costs. Providing such a range is anything but an "admission" of some kind or a call to "wait and see" before we can be more certain.

Climate deniers often point to the unanswered—or unanswerable—questions about climate change and insist those are good reasons to wait, to second-guess, to preserve the status quo. Take Russell Vought, head of the Office of Management and Budget, who was pushing for the next version of the National Climate Assessment to include more "diverse viewpoints," as Project 2025 puts it, before the assessment was all but canceled recently. A phrase like "diverse viewpoints" sets off warning bells for many climate scientists, pointing to the transparent effort to continue to foment confusion about the causes and impacts of climate change.

It's nothing new: For decades now, uncertainty has been leveraged by those with an economic stake in the fossil fuel-powered status quo. In response, it's tempting for us, as scientists, to point to all the "virtual certainties" in our bodies of work,

to insist that yes, we do know what the future holds for the climate.

When we get locked into this back-and-forth, we overlook something crucial: The uncertainty that is baked into this crisis is all the more reason to take urgent and decisive action to address it.

Scientists should not be afraid to acknowledge what's unknowable about the future before us. Perhaps, if we humbly accept this uncertainty and, in fact, trumpet it as a reason to mobilize around rapid decarbonization, we can repurpose uncertainty from the barrier to climate progress that it's long been into a benevolent cudgel on the side of spurring climate action.

Let's finally acknowledge how much we don't know and, from that new point of departure, do everything we can to save our home.

This op-ed was originally published by Salon.

Gernot Wagner is the senior lecturer in discipline of economics at Columbia Business School and faculty director of the Climate Knowledge Initiative at the Tamer Institute for Social Enterprise and Climate Change.

PROFESSOR CONOR WALSH

The Global Renewable Energy Boom Can't Be Stopped—Not Even by US Politics

Despite political shifts in Washington, the renewable energy transition is accelerating worldwide. Professor Conor Walsh explains why the economics of clean energy have already won—and what it means for the future.

The changing political winds in Washington can feel like whiplash for renewable energy. Under the Biden administration, the Inflation Reduction Act channeled enormous subsidies to solar and wind energy, including generous tax credits worth $127 billion. The new Trump administration has quickly replaced this largesse with a stranglehold: It immediately paused approval for renewables on federal land and attempted to pause or rescind billions of dollars of grant funding and loans to renewable energy projects.

It's tempting to think that the new federal turn spells disaster for clean energy. But in the long run, these shifts may not be as disruptive as expected. That's because the United States is just one player in a global transformation that is accelerating—one that no single government can meaningfully slow, let alone stop.

Around the world, solar, wind, and battery storage are scaling at an unprecedented pace, driven by economics rather than politics. In 2010, over 80 percent of new electricity generation capacity installed worldwide was in traditional energy, primarily natural gas and coal. By 2023, this had flipped to be 86 percent renewable energy, with solar alone accounting for 62 percent gigawatts (GW). Twenty years ago, the world was building 1 GW of solar power every year. In 2024, it was building over 1 GW every single day.

The scale of this growth is almost hard to grasp. To take one example, China recently announced plans to dam the Brahmaputra River to generate hydroelectricity. The capacity of this new dam would be a stunning 60 GW, almost three times as large as the current world-record holder, the Three Gorges Dam. A plant that size could generate enough electricity for 27 million American households. However, it will likely take up to a decade to construct and test. Meanwhile, China installed almost 280 GW of solar capacity in a single year in 2024.

While China is the clear world leader for sheer scale, all across the world we are seeing the same patterns. India is now the third largest producer of solar power, after the United States and China. In the past 10 years, coal-burning Australia went from having 5 percent to 36 percent of its energy coming from the sun and wind. In the same time

frame, Germany hit 47 percent, Chile 42 percent, and Spain and the Netherlands 40 percent. Households in Pakistan installed so much behind-the-meter solar last year that total grid demand plummeted 10 percent.

The new economics of renewable energy driving this change is dominated by three concerns: cost, storage, and time to build. When it comes to cost, the debate is over. Renewables are the cheapest source of bulk new supply almost everywhere on the planet. Their costs have fallen astonishingly fast, by 90 percent for solar in the past decade and 70 percent for wind.

"The energy future isn't being shaped in Washington. It's being built in factories, supply chains, and labs around the world."
PROFESSOR CONOR WALSH

The reason behind this is a process common to many manufactured goods. Increased production scale gives rise to lower unit cost. Lower cost then increases the number of markets where the technology can compete, driving further increases in production. This process has many names, but for solar, it is often called Wright's Law, and it has overseen rapid cost reduction on the order of 20 percent a year for decades.

Crucially, however, renewables are intermittent. The sun is not available at night, and wind energy can disappear for days at a time. As renewables account for a larger share of generation, storage becomes ever more important.

Fortunately, the good news on this has been unrelenting. The same process of rapid cost reduction is playing out with lithium-ion batteries, which have declined in price by 97 percent in three decades. As a result, they have quickly become commercially viable. In California, large batteries now supply 20 percent of the state's evening demand—something unimaginable just three years ago. Texas, hardly a climate champion, is seeing similar explosive growth in storage, with capacity doubling every year since the pandemic.

In fact, over 50 percent of solar projects in the interconnection queue in the United States now include storage, enabling them to sell electricity at more high-value times like the evening and shore up the grid when needed. Battery cost reductions are expected to only accelerate as electric vehicles roll out globally, driving further increases in production scale for lithium-ion batteries.

The last concern driving the uptake of renewables is how quick they are to build compared to fossil fuel infrastructure. Build times for solar, storage, and wind are currently around 18 months. Fossil fuel infrastructure is much slower to construct. NextEra Energy CEO John Ketchum recently noted, "To get your hands on a gas turbine and to actually get it built across the market, you're really looking at 2030 or later." Nuclear, of course, takes even longer to build given stringent regulatory hurdles. To meet the expected boom in US demand from AI data centers and electrification, faster renewable rollouts will account for the bulk of new supply.

The newly announced US tariffs, if held in place, will certainly mean a rocky 2025 for US renewables. The high tariffs on Vietnam and Thailand in particular will hurt US solar developers, and US factories will not be able to fully compensate for panel imports from these countries.

But in the longer term, tariffs are likely to be nothing more than a speed bump. Despite political headwinds, the energy future is not being shaped in Washington, but in factories, supply chains, and research laboratories around the world. Like the shift from landlines to mobile phones, the global move to clean energy is now driven by practicality and cost. Governments may slow it or redirect it—but they can no longer stop it. Welcome to the age of renewables.

Conor Walsh is an assistant professor of business in the Economics Division at Columbia Business School.

A course co-taught by Professor Bruce Usher helps students develop deep expertise in climate solution areas ripe for investment.

Bridging Business, Engineering, and Climate Tech

A Columbia Business School course pairs students with VC funds assessing future climate technologies.

BY JONATHAN SPERLING

What does bringing a breakthrough climate technology from the lab to the real world take? At Columbia Business School, a course designed by Professors Bruce Usher, Alan West, and Dave Kirkpatrick offers students the rare opportunity to explore that question firsthand by teaming up with venture capitalists to evaluate emerging climate solutions with the potential to reshape entire industries.

The course, Climate Tech, builds on foundational coursework like Business and Climate Change, immersing students in the practical, high-stakes world of early-stage climate technology investing.

What sets the course apart, however, is its structure: an interdisciplinary format that pairs MBA students with engineering master's students and matches each student team with a real-world venture capital fund investing in climate tech.

According to Usher, the Elizabeth B. Strickler ’86 and Mark T. Gallogly ’86 Faculty Director at the School’s Tamer Institute for Social Enterprise and Climate Change, the result is a deeply experiential course that tests students’ abilities to evaluate technologies not just for their scientific or commercial promise but also for their potential to help solve the defining crisis of our time.

“Having engineering and MBA students work together, we thought there would be learning in that, and there absolutely is. How engineers approach problems is extremely different,” Usher says.

The course aims to teach students how to collaborate effectively across the two disciplines, understand the investment process for early-stage climate technologies, and develop deep expertise in specific climate solution areas ripe for investment.

Real Ventures, Real Stakes

Each spring, 40 students are selected for the course—20 MBA students and 20 engineering students from the School of Engineering and Applied Science (SEAS). The cohort is then divided into 10 four-person teams, each composed of two MBA students and two engineering students. Every team is assigned a unique climate technology and a sponsoring VC fund from a network of early-stage investors working at the frontier of climate innovation.

Throughout the semester, students collaborate closely with their assigned funds, beginning with a kickoff meeting and continuing with biweekly check-ins. This culminates in final presentations delivered both in class and directly to the funds.

Students are tasked with rigorously evaluating their assigned technology across three core dimensions: technical viability, commercial feasibility, and climate impact. This includes assessing whether a technology will work at scale, whether a viable business model exists, and what kind of emissions-reduction or adaptation potential it could unlock.

In the most recent iterations of the course, student teams have analyzed innovations ranging from next-generation geothermal systems to new formulations of low-carbon concrete. Some groups conclude the technologies are promising; others advise their VC sponsors to pass. According to Usher, either outcome represents a successful learning experience.

“Students quickly learn this is a complex world, complex both from an engineering perspective and from a business perspective. How do you replace an incumbent industry? How do you change the way people buy things and monetize it? If it’s not profitable, it will not be financially sustainable,” Usher says.

For one student team, that complexity came into sharp focus during a project on grid stability. Its assigned task: assess how replacing coal and gas power plants—which provide essential “grid inertia” via large spinning turbines—with solar and wind power affects frequency stability on the electric grid. The group spent weeks consulting with experts, many of whom acknowledged the risk of grid instability in high-renewable scenarios but also emphasized that the exact tipping point remained unclear.

Just one day before the team’s final presentation to the VC fund, the Iberian power grid in Spain and Portugal collapsed—reportedly due to a momentary

Professor Bruce Usher

imbalance triggered by over 70 percent of electricity being supplied by renewables at the time. The blackout underscored the fragility of grids that lack sufficient "grid-forming" assets, and it instantly reframed the relevance of the team's work.

The real-world event brought urgency and clarity to their recommendations, which focused on nascent climate technologies like grid-forming inverters and synchronous condensers to stabilize high-renewable grids.

"This clearly demonstrated the relevance of our project and made it much easier to explain the importance of adding grid-forming inverters or synchronous condensers to grids with high renewable penetration," says Quint Houwink '25, a former MBA student who worked on the team.

> "Students quickly learn this is a complex world, complex both from an engineering perspective and from a business perspective. How do you replace an incumbent industry? How do you change the way people buy things and monetize it? If it's not profitable, it will not be financially sustainable."
>
> **Professor Bruce Usher**

Teaching the Reality of Climate Tech

Usher notes that the course emerged from a broader vision to expand Columbia's climate curriculum, particularly its offerings focused on business and innovation. As co-director of the School's Tamer Institute for Social Enterprise and Climate Change and a faculty member at the Columbia Climate School, he has long emphasized the role of business in addressing environmental challenges.

The Climate Tech course now sits at the heart of that mission, building directly on the Business and Climate Change prerequisite course. While that course lays the groundwork in climate science, market structures, and policy, Climate Tech offers a hands-on opportunity to apply those concepts to real technologies, teams, and investors.

A key design principle of the course is its cross-disciplinary approach. "When you're out in a working environment, particularly around something like climate technologies, it will always be a mix of engineers and business folks. It just is, because you have to understand both those angles," Usher says.

Engineers bring technical depth; MBAs contribute market insight. Each group learns from the other's perspective—and, in many cases, figures out how to bridge language, assumptions, and problem-solving approaches that initially feel worlds apart.

The learning curve can be steep. Students must master the details of unfamiliar sectors quickly, often narrowing from broad topics like carbon capture and sustainable agriculture to deep dives on specific technologies or startups. Many teams conclude that no investable opportunity exists. That is still a valuable outcome that reflects the real risks in climate tech investing, according to Usher.

Workload expectations are also substantial. Students spend up to nine hours weekly on research, fund meetings, and deliverables. Evaluation is based on group milestones, including a midterm report, final presentation, and final individual reflection.

Despite logistical challenges—coordinating across two schools, grading across disciplines, and navigating constrained capacity—the course has proved to be one of Columbia's most innovative experiential offerings.

The payoff is meaningful, too. Some VC sponsors have pursued student-recommended investments while others have benefited from advice not to pursue some technologies. Most of the VC funds have returned every year to participate in the course, providing rare access and feedback that students wouldn't otherwise find in a classroom.

When Convenience Backfires

In the world of omnichannel retail, overlooked operational decisions can have an outsized impact on a retailer's environmental footprint and bottom line.

BY JONATHAN SPERLING

Consumers, particularly those in the United States, have grown to love the convenience of omnichannel retailing—the ability to purchase a product online, return in-store, and expect seamless service in between.

However, beneath the surface of this flexibility lies a growing operational and environmental problem that most shoppers—and many retailers—haven't fully confronted. Nicole DeHoratius, a professor in Columbia Business School's Decision, Risk, and Operations Division, examines these unseen costs in her research, which centers around retail operations, supply chain management, and customer satisfaction.

In her research on "stray inventory" in clothing retailers and emerging work on food waste in grocery retail, DeHoratius has found that operational execution in supply chains cannot be overlooked if leaders want to ensure their business is sustainable while protecting their bottom line.

A Hidden Drag on Retail and the Planet

The rise of "buy online, return in-store" (BORIS) options may offer customer satisfaction and foot traffic, but it also introduces a serious challenge: inventory returning to stores where it was never meant to be sold. DeHoratius and her co-researchers–Christoph Baldauf of the Stockholm School of Economics, Fredrik Eng-Larsson of Stockholm University, and Olov Isaksson of Stockholm University–call this stray inventory, items that disrupt the curated product mix, clutter shelves, and ultimately hurt store performance and the planet.

Stray inventory isn't just excess stock; it's fundamentally misaligned with store planning. Customers might buy a bathing suit online in December and return it to a store carrying only winter apparel. That item, now out of season and out of place, ends up on a clearance rack or in a cluttered backroom. It often sells slowly—if at all—and at a steep discount.

"Overall, we need to be embedding the cost of these returns on the environment and on consumer behavior into the cost of doing business."

Professor Nicole DeHoratius

DeHoratius and colleagues found that stray inventory reduces store conversion rates in a large-scale study conducted with a European apparel retailer. Each additional piece of stray inventory was associated with a measurable decline in daily store sales, not because of steeper markdowns but because customers were less likely to make purchases. When foot traffic was constant, stores with higher levels of stray inventory saw fewer transactions.

Retailers often defend BORIS as a driver of in-store engagement and a way to quickly restock returned items. However, DeHoratius's research shows the opposite: Stray inventory can cannibalize higher-margin products, degrade the shopping experience, and bog down staff with unnecessary restocking. Perhaps most concerning, many of these returned goods risk eventual disposal, especially if markdowns or salvage efforts fail—adding another layer of environmental waste.

"Overall, we need to be embedding the cost of these returns on the environment and on consumer behavior into the cost of doing business," DeHoratius says.

DeHoratius suggests that omnichannel return policies need to evolve. Strategies include restricting which stores can accept certain returns, investing in centralized return hubs, and refining assortment planning so that stores can more seamlessly accommodate online merchandise. Retailers should also incorporate return activities into their labor planning, as forecasted sales are often the key driver of staffing levels. Sometimes, discouraging in-store returns altogether makes sense, despite customer preferences.

What's clear is that operational decisions—often seen as secondary to sustainability goals—are, in fact, central to achieving them. Reducing retail's environmental impact requires better alignment between inventory strategy and customer behavior.

Food Waste in the Age of Omnichannel Groceries

While apparel faces one set of challenges, omnichannel grocery retail presents another: food waste. In a related stream of research, DeHoratius and her co-researchers, Eng-Larsson and Pedro Amorim of the University of Porto, are investigating how the move to online grocery fulfillment is changing store waste patterns—sometimes for the worse.

Her early findings center on an increasingly common practice: using in-store employees or third-party "pickers" to fulfill online grocery orders from existing store shelves. This strategy offers operational advantages—the same inventory pool serves both in-store and online customers—but in practice, it may be exacerbating waste.

The issue stems from the way pickers select products. Most are instructed to prioritize freshness, consistently choosing the newest items over older stock. This can disrupt first-in, first-out inventory flow, leaving older perishables to linger past their expiration dates. The result? More waste, especially in categories like produce and dairy.


Professor Nicole DeHoratius

"We need to be thinking about better matching supply with demand—having better planning tools so that we're not left with a bunch of wastage. And then, if we are, how do we accommodate that wastage?" DeHoratius says.

One potential remedy involves redesigning the fulfillment network entirely, shifting from in-store picking to dedicated "dark stores" or micro-fulfillment centers where inventory turnover can be more tightly controlled. Another solution is a change in training and incentive structures to balance freshness with waste reduction.

DeHoratius also highlights the importance of embedding environmental and financial waste costs into decision-making models. Most retailers don't factor the environmental cost of overstocking, returning, or discarding items into their procurement algorithms. Until they do, waste will remain a "free" externality in operational terms.

Creating Leaders of Sustainable Supply Chains

Beyond her research, DeHoratius is also preparing future leaders to navigate these complex trade-offs in her new course at CBS, Leading Sustainable Supply Chains and Operations. The course draws directly from her research and industry experience to help students rethink how supply chains intersect with climate goals, labor standards, and business resilience.

The curriculum is built around a practical four-part framework: reduce costs and risks through operational efficiency, manage lifecycle impacts through better design, unlock innovation through circularity, and drive equitable growth through workforce empowerment. Students analyze real-world case studies, from apparel companies grappling with overproduction to fast food franchises managing sustainable beef sourcing. The focus is always on equipping students with the tools to measure trade-offs and design operations that align sustainability with strategic goals.

One central message of the course is that true sustainability isn't just about long-term aspirations—it lives in the day-to-day decisions of supply chain leaders. Whether determining return policies, managing inventory, or partnering with suppliers, business leaders have far more power to influence environmental outcomes than they may realize.

DeHoratius emphasizes that awareness is often the first step. Many students, she notes, arrive at the course with limited exposure to the downstream consequences of consumer behavior, such as product bracketing or fast fashion returns.

"Education is a huge part of helping people change behavior," she says. "The second component is that they will all end up in leadership positions where they will have control or decision rights over some of these elements."

By showing students how their individual and professional choices reverberate through global systems, the course aims to create not just informed operators but responsible ones.

Key Takeaways for Business Leaders

1. Unplanned inventory can cannibalize profits and increase landfill-bound goods, eroding both margin and sustainability.
2. From return policies to procurement models, operational decisions are key to aligning business goals with climate impact.
3. Limiting inventory return locations, forecasting return volume, and integrating returns into labor and inventory planning are strategies to consider.

Jonathan Rose, president of Jonathan Rose Companies, left, and Rohit Aggarwala '00, New York City's chief climate officer, at the 2025 Climate Business and Investment Conference.

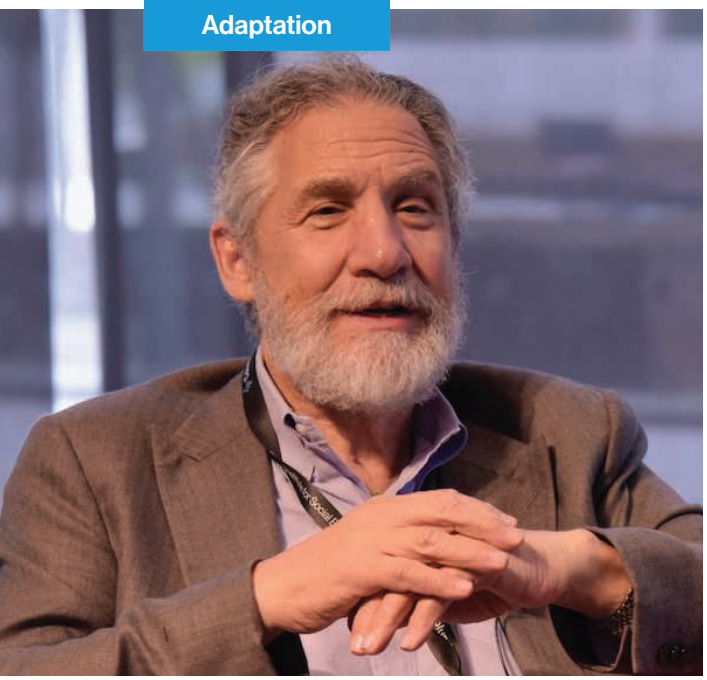
How Climate Is Reshaping Real Estate

At the 2025 Climate Business and Investment Conference, experts explored how rising temperatures, severe storms, and shifting regulations are reshaping the way we build, invest, and live.

In an era defined by climate change, real estate faces a new, urgent challenge: resilience.

At the 2025 Climate Business and Investment Conference at Columbia Business School, two expert panels explored the intersection of real estate and climate risk. The discussions highlighted how rising temperatures, intensifying storms, and regulatory changes are reshaping the way we build, invest, and live in cities—especially in New York City.

Moderated by Stijn Van Nieuwerburgh, Earle W. Kazis and Benjamin Schore Professor of Real Estate and professor of finance at CBS, the first panel, "NYC Real Estate Challenges in a Changing Climate," featured Jonathan Rose, president of Jonathan Rose Companies, and Rohit Aggarwala '00, New York City's chief climate officer. Together, they described the scale of climate risks facing the city. Rising sea levels threaten New York's 520 miles of



coastline. Heat waves now kill more residents annually than flooding. And massive rainstorms, which were once rare, are now frequent.

Aggarwala emphasized that New York City's approach to climate resilience is built around three key risks: coastal flooding, extreme heat, and intense rainstorms. Coastal areas face billions of dollars in potential damages, while inland neighborhoods must cope with deadly heat waves. In response, the city has implemented ambitious measures like Local Law 97, which mandates energy efficiency improvements in large buildings, and urban cooling initiatives like planting millions of trees.

But even these efforts face challenges. Aggarwala noted that Local Law 97, a piece of climate legislation enacted as part of New York City's Climate Mobilization Act, which aims to reduce carbon emissions, has been difficult for some lower-income cooperatives to comply with. Without proper guidance, some property owners struggle to meet the requirements, relying on outdated advice from unqualified contractors.

Rose brought a developer's perspective to the conversation. His company has pioneered resilient, sustainable housing, but he acknowledged that most of the city's housing stock was built long before sustainability became a priority. Transforming these buildings to meet modern climate standards is a massive undertaking, both financially and technically.

Rose pointed out that the economics of resilience often work against property owners. Energy-efficient technologies can reduce costs over time, but the initial investment is often too high for affordable housing developments. Rose argued for greater public funding and innovative financing models to support widespread resilience upgrades.

The second panel, "Housing Markets and Climate Realities," shifted focus to how climate risk is impacting housing markets and buyer behavior. Skylar Olsen, chief economist at Zillow, joined Professor Gernot Wagner to discuss how the popular real estate app and website is integrating climate risk data into its property listings, offering buyers detailed information on such factors as flood and heat risk. She noted that homes in high-risk areas are beginning to see slower price growth and longer time on the market.

But Olsen also highlighted the complexity of the problem. While climate risk data can help buyers make informed decisions, it can also create anxiety. Some buyers may avoid at-risk areas entirely, while others may underestimate the risks because they are poorly communicated.

Both panels agreed on a critical point: Information alone is not enough. Cities must invest in resilience, and property owners must be empowered to make informed choices. This will require clear communication, better incentives, and public-private partnerships.

Real estate is more than just buildings. It is a foundation of communities and a critical driver of economic growth. As climate risks intensify, cities like New York must lead in showing how real estate can be both profitable and resilient. And as these experts made clear, achieving that balance will require innovation, investment, and a shared commitment to a sustainable future.

FROM LEFT:
Jonathan Rose,
Rohit Aggarwala '00,
and moderator Stijn Van Nieuwerburgh, Earle W. Kazis and Benjamin Schore Professor of Real Estate

But achieving resilience in real estate is not just about technology or regulation—it's about changing mindsets. Both Rose and Aggarwala emphasized that resilience must be woven into every decision, from the materials used in construction to the long-term planning of neighborhoods. For developers, that means thinking beyond immediate profits and considering the long-term sustainability of their properties.

Rose, whose company has pioneered sustainable housing for decades, highlighted the importance of adaptive reuse: transforming existing buildings to meet modern efficiency standards rather than tearing them down. This approach not only reduces waste but also preserves the character of neighborhoods.

Aggarwala pointed out that New York City's resilience strategy also involves engaging residents, particularly in vulnerable communities. Education campaigns, support programs, and clear communication about risks can help residents take proactive measures to protect their homes and health.

Olsen from Zillow echoed this sentiment, noting that transparency is crucial. By providing clear, accessible information about climate risks, Zillow aims to empower buyers to make informed decisions. But she also warned that information without support can create anxiety.

Looking ahead, one critical challenge is funding. Resilience upgrades are expensive, and while large developers may have access to capital, smaller property owners often do not. This is particularly true for low-income cooperatives and individual homeowners. Aggarwala emphasized that the city must create accessible financing solutions, such as low-interest loans or grants, to help these groups comply with new regulations and adapt to a changing climate.

On the technology front, new materials and construction techniques offer promise. Rose highlighted the growing use of cross-laminated timber, which is both sustainable and resilient. He also pointed to advancements in energy-efficient building designs, including passive house standards that drastically reduce energy consumption.

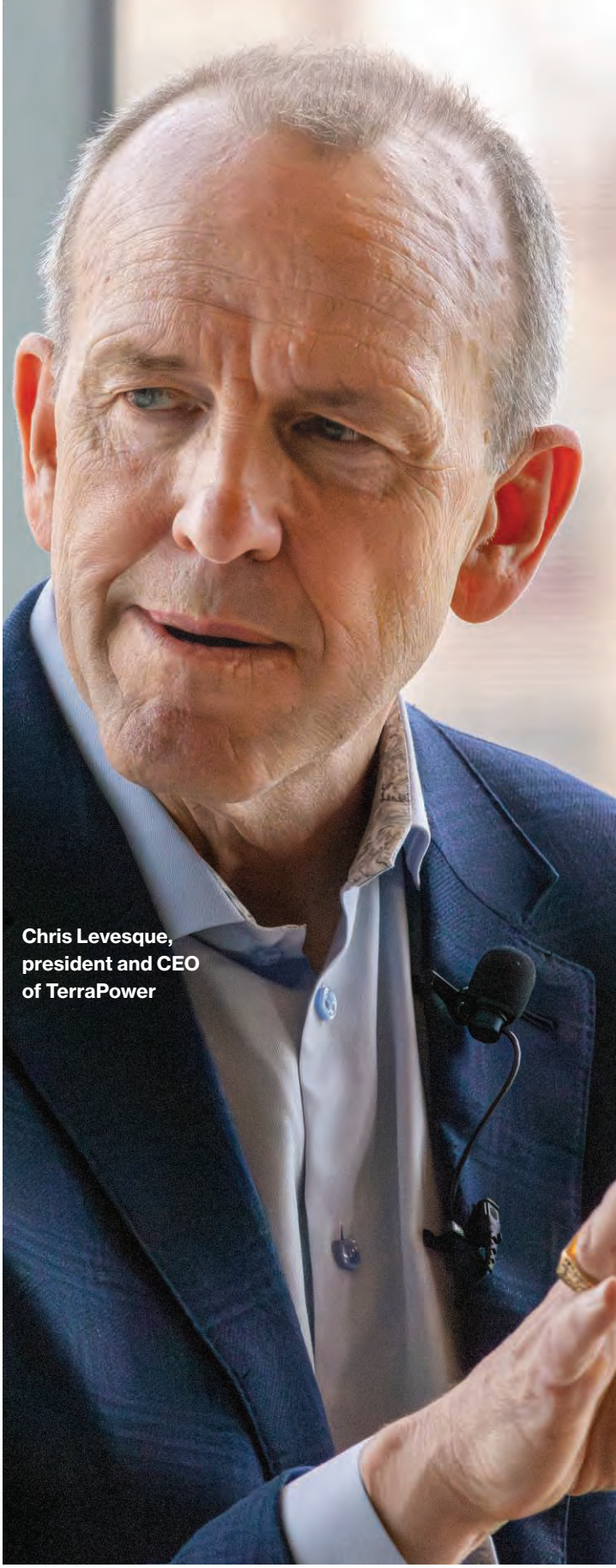
But technology alone is not a solution. As Olsen pointed out, education is essential. Buyers must understand climate risks, and property owners must know how to make their buildings more resilient. Public awareness campaigns and clear, actionable guidance are key to bridging this knowledge gap.[4]

This article was created with the assistance of generative AI and subsequently reviewed and refined by a human editor to ensure accuracy, clarity, and coherence.

Key Takeaways for Business Leaders

1. Proactively upgrade buildings for climate resilience. Use public funding and new financing models.
2. Provide clear, accessible climate risk information to buyers and tenants.
3. Collaborate with public and private sectors to scale resilience solutions.

Bob Mumgaard, CEO and co-founder of Commonwealth Fusion Systems



Chris Levesque, president and CEO of TerraPower

Paving the Way to Clean Energy

Bob Mumgaard and Chris Levesque—trailblazers in the nuclear energy industry—share their insights on the global transition to sustainability.

BY JONATHAN SPERLING

As the world accelerates toward net zero, the future of the climate transition increasingly hinges on breakthroughs in nuclear energy—both in the realm of next-generation fission and the long-promised potential of fusion.

While nuclear is often overshadowed by other forms of sustainable energy, namely wind and solar, it remains one of the most promising pathways to decarbonization.

At Columbia Business School, two pioneering CEOs in the nuclear field—Bob Mumgaard of Commonwealth Fusion Systems (CFS) and Chris Levesque of TerraPower—shared their insights into how their respective technologies are shaping the path to a cleaner, more resilient energy system.

Though their companies are rooted in different technologies, both leaders offered a vision of energy that is cleaner, denser, and more scalable than anything seen before.

Fusion Energy's New Space Race

Mumgaard, who co-founded CFS in 2018, leads one of the most ambitious efforts to bring fusion power—combining lighter atoms to form a heavier one—to market. Speaking at an event hosted by the School's Tamer Institute for Social Enterprise and Climate Change, he laid out the global stakes in the race to develop commercial fusion energy.

"Fusion has pretty big strategic implications," he said. "Think about what fusion is—every energy source before was sort of hunter-gatherer mode. You went out, gathered a resource, dug it up and burned it, piped it, or waited for the sun or wind. With fusion, you're building a machine. So it scales very quickly."

Fusion offers the tantalizing prospect of clean, reliable, and nearly limitless energy, free from the carbon emissions of fossil fuels and the intermittency of solar and wind. Unlike traditional nuclear fission, fusion reactions do not produce long-lived radioactive waste or carry the same risk of meltdown. That's why dozens of countries and companies are chasing the dream, including China and the United Kingdom, which have recently outpaced the United States in fusion investment and project scale.

Still, Mumgaard expressed cautious optimism about American leadership in the space. Fusion is now a top-four priority under the new US energy secretary, and regulatory changes—like treating fusion machines more like particle accelerators than fission reactors—could open the door for faster innovation.

Since its founding, CFS has raised over $2 billion and grown to more than 1,000 employees. Its flagship project, SPARC, is designed to be the first commercially relevant fusion machine to achieve net energy gain, producing more energy than it consumes to sustain the reaction. Achieving that milestone would place CFS in rare company, alongside only the US Department of Energy's national laboratories.

Mumgaard outlined six key challenges all fusion companies must solve to transition from physics experiments to functioning power plants:

1. Can your company produce stable plasma?
2. Can your company heat the plasma to 10,000,000 degrees Celsius?
3. Is your plasma dense enough for fusion?
4. Can your plasma produce net energy gain?
5. Can your fusion machine (i.e., your entire plant) generate enough power to sell the excess?
6. Is your fusion power competitive with other power sources?

CFS has already reached milestone three—achieving the necessary plasma density—and is closing in on milestone four: generating net positive energy. But scientific breakthroughs alone aren't enough.

"Turning these milestones into a commercial reality requires a different kind of innovation," Mumgaard said. "Project finance, supply chain management, regulatory approval—it all has to come together."

That's why CFS embraces a vertically integrated approach, combining scientific rigor with the tools of commercial enterprise. And it's why Mumgaard insists that leadership in this field requires a willingness to "fire yourself"—meaning to hand off responsibilities as new experts come in and the company's needs evolve.

Reinventing Nuclear: The Natrium Reactor Advantage

While fusion remains on the horizon, next-generation fission—splitting a heavy atom into lighter ones—is already being reimagined for deployment today. At an Earth Week event hosted by CBS and the Columbia Climate School, Levesque described how TerraPower is transforming nuclear energy's image and performance.

Founded by Bill Gates in 2006, TerraPower has spent nearly two decades developing the Natrium reactor, a fourth-generation nuclear system that breaks from traditional models in fundamental ways. Levesque, a veteran of the US Navy's nuclear program and executive roles at Westinghouse and AREVA, brings deep experience in overcoming the technical and logistical hurdles of nuclear construction.

"Traditional nuclear plants are expensive and slow to build," he said. "They require huge high-pressure vessels and thick concrete containment. With Natrium, we've designed something different from the ground up."

Rather than generate steam immediately, Natrium reactors heat a tank of molten sodium, creating a "thermal battery" that stores energy until electricity demand is highest. This innovation allows TerraPower to deliver power during peak hours, when prices are highest, while simultaneously supporting grid stability in the face of rising renewable penetration.

"Energy storage gave us almost an unanticipated benefit," said Levesque. "It allowed us to separate the nuclear and non-nuclear parts of the plant, significantly reducing costs and regulatory hurdles."

Natrium's advantages go beyond flexibility and cost. The system requires no high-pressure infra-

structure or proximity to large bodies of water, making it viable for locations like Kemmerer, Wyoming, where TerraPower is building its first plant on the site of a retiring coal facility. The modular design allows for faster construction and the potential for mass production in factory settings.

A Converging Vision for the Energy Transition

What unites the visions of Mumgaard and Levesque is the belief that clean energy innovation must be fast, flexible, and scalable. Both fusion and advanced fission aim to replace fossil-fuel-based power while complementing variable renewable sources.

Levesque emphasized the urgency of a diversified approach: "We need a portfolio, and nuclear is a really important part of that portfolio." He cited MIT research showing that integrating nuclear into the grid reduces total system costs by around 20 percent.

> "Traditional nuclear plants are expensive and slow to build. They require huge high-pressure vessels and thick concrete containment. With Natrium, we've designed something different from the ground up."
>
> **Chris Levesque, CEO, TerraPower**

With the rise of AI, electric vehicles, and digital infrastructure, electricity demand is projected to triple by 2050. Nuclear energy offers unmatched power density—a uranium pellet the size of a pinky finger can match the output of a railcar of coal—and provides secure energy in regions vulnerable to supply disruptions.

"When you load the fuel, you've loaded two winters' worth of heat," Levesque said. "You can't have an interruption due to a pipeline or railway issue."

Fusion shares these advantages—minus the radioactive waste or security concerns—but is still a decade or more away from commercial deployment. That's why companies like CFS are focused on milestone-based progress and reducing "discovery risk" by building on well-understood physics, rather than speculative leaps.

Meanwhile, TerraPower is moving quickly to deploy plants that will bridge the current gap in clean power. As Levesque noted, "Solar and wind are important, but they can't do it alone."

Scaling Up: Technology Meets Human Capital

Both leaders acknowledged that technology is only part of the equation. The energy transition will require not just new machines, but new people, processes, and supply chains.

Levesque pointed to TerraPower's use of advanced modeling and AI to simulate plant operations and optimize supply chains. "The day we turn the reactor on—with a thousand sensors—AI will be learning from the reactor as it goes online," he said.

Yet a major bottleneck remains: workforce development. Many in the nuclear field lack experience with modern construction projects. TerraPower is addressing the issue by designing reactors that require less onsite labor and by partnering with community colleges to train a new generation of skilled workers.

Mumgaard echoed the importance of cross-disciplinary talent. At CFS, the team includes not just physicists and engineers, but professionals from aerospace, biotech, and regulatory fields—all vital for building a commercially viable fusion company.

Both companies are also navigating global supply chain questions. While some high-precision parts may come from abroad, Levesque stressed the need to revitalize domestic manufacturing. "We should worry about not having enough people to power our economy," he said.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The Surprising Power of Climate Prediction Markets

Columbia Business School research shows that letting people earn money by predicting climate outcomes can shift their attitudes, behavior, and understanding of climate issues.

BY ROLAND WYN JONES

Climate change remains a low priority for Americans. According to a survey from Pew Research, it ranks 17th out of 21 national issues, trailing behind terrorism, crime, and education.

While this is in part due to the fact that individuals tend to form their climate opinions based on political affiliations, it is also a consequence of how the human brain works.

We have evolved to consider short-term consequences at small scales, making it hard for people to think about the future, imagine catastrophic outcomes, or understand cause-effect relationships that are complex—the recycling of a bottle of water today and its impact on the magnitude of a tsunami in the future, for example. This brain challenge extends to other domains, such as the difficulty some individuals face in saving for retirement or making

lifestyle choices that promote their long-term health.

What would it take to shift someone's perspective on climate change? Research from Columbia Business School offers a surprising answer: placing bets.

In a study published in *Nature Climate Change*, researchers found that participating in a climate prediction market, where individuals place bets on future climate events, can shift attitudes, increase knowledge, and boost support for climate policies. The mechanism is simple but powerful: When people put money on the line, they become more engaged with reality. And in the case of climate change, that engagement can lead to a shift in perspective.

Betting on the Future

The study was led by Sandra Matz, Lulu Chow Wang Associate Professor of Business, and Academic Director in Executive Education Moran Cerf, a neuroscientist by training, alongside Northwestern University's Malcolm MacIver. With funding from the Tamer Institute for Social Enterprise and Climate Change, the team conducted two studies involving more than 1,000 participants, each of whom was given $20 and invited to join one of two online prediction markets: one focused on climate events and another on unrelated topics, such as sports or entertainment.

Over the course of four weeks, the climate group placed bets on future real-world outcomes, such as whether July would be the hottest month in a decade or if CO2 levels would surpass a specific threshold. These were not hypothetical wagers. If participants predicted correctly, they made money. If they were wrong, they lost.

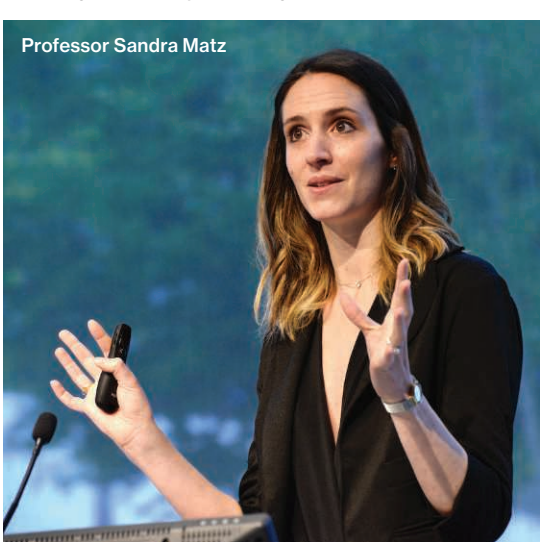
Prediction markets push participants to think critically and independently about their decisions, rather than echoing the views of their political or social circles. Participants are financially motivated to analyze data and make informed estimates. In the study, participants actively explored climate science, past weather patterns, and forecasts. The structure encouraged learning and rewarded accuracy. It also provided participants with constant feedback (winning or losing money) on the accuracy of their past predictions. Finally, the process made the subject of climate change more engaging, offering a mix of curiosity, competition, and real-world relevance.

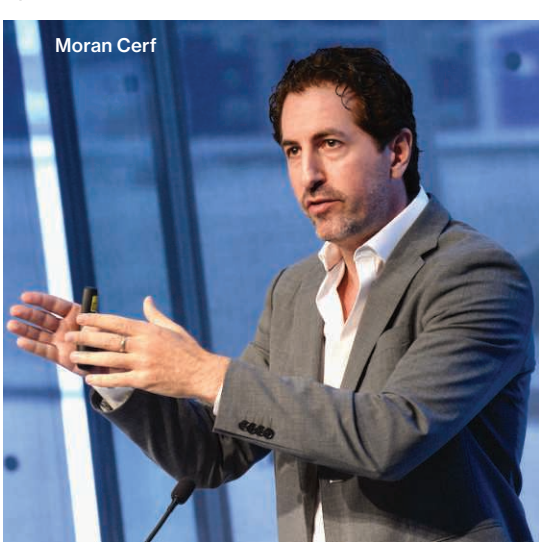
"People seem to change their views more when the process is gamified, and when they have to put their money where their mouth is," says Cerf.

Why Climate Change Is Hard to Grasp

Climate change is a perfect example of how our cognitive biases can hinder our comprehension, according to Cerf. The human brain is challenged by nearly every aspect of the issue. "It involves long-term consequences, but the sacrifices you have to make are immediate. The efforts you make may primarily benefit others. And it is hard to even grasp the magnitude of the impacts. You may not notice the insects that go extinct, or the disaster you prevented, so it is easy to ignore those," he says. "You have to walk a few more steps to the recycling bin, but throwing the paper there doesn't immediately make the tornado a little smaller. So your brain tends to discount those cause-effect relationships."

People also tend to conform to the beliefs of those around them, even if those beliefs are false. In communities where skepticism about climate change is prevalent, social cohesion often takes precedence over scientific truth. That creates a


Professor Sandra Matz


Moran Cerf

problem for traditional approaches, such as education campaigns or fact-based public service ads.

When you try to tell someone they're wrong—especially on politicized issues—it can backfire, according to Cerf. "Further, people don't like to think of the future when they have a lot on their plate in the here and now. Prediction markets allow them to profit earlier from things trending in the right direction," Cerf adds. "I often quote Groucho Marx to our students in this context. He said, 'Why should I care about future generations? What did a future generation ever do for me?' This joke by Marx is actually, sadly, manifested by our behavior daily."

> "If we can teach people how to see the world from other perspectives, we can actually solve the bigger problem, which is how to bring the world together."
> **Moran Cerf**

Measurable Shifts in Attitudes

Before and after the betting period, participants completed surveys about their views on climate change. The results were clear: Those whose bet outcomes proved more accurate exhibited a measurable increase in concern about climate change, greater support for mitigation policies, and a more comprehensive understanding of climate science.

Importantly, these effects held across the political spectrum. The researchers saw shifts in people regardless of where they started, showing that belief change is not limited to one side of the aisle.

The researchers argue that prediction markets succeed because they bypass the usual psychological defenses. Unlike public debates or educational messaging, markets don't confront people or challenge their identity. Instead, they invite participation on neutral ground: the shared desire to be right—and to profit from it.

A Tool for Policymakers and Investors

Beyond individual belief change, the researchers see prediction markets as a tool for policymakers and governments. Because these markets aggregate diverse viewpoints and reward accuracy, they can provide more reliable forecasts than polls or focus groups. For example, a government agency could use them to test public expectations for climate events or gauge likely reactions to new policies.

They could also become a vehicle for climate investment.

In a system where private capital flows toward climate outcomes, investors could back the scenarios they believe are most likely, and any gains could help fund mitigation or adaptation efforts.

There's also the possibility of "ethical arbitrage," meaning if someone profits from correctly predicting a climate disaster, those funds could be used to help prevent it. And if climate change turns out to be less severe than expected, the financial loss is minimal compared to the upside of a safer world.

Scaling the Vision

The next challenge is scale. The study ran with relatively small sums of money in a controlled setting. Cerf and the team have already spoken with government agencies, such as the CFTC, and some leading prediction market sites, and are exploring ways to build a regulated, large-scale climate prediction market—one that allows real financial stakes and global participation.

The idea is not just to change individual minds. It is to create an ecosystem where truth matters and where bets force people to engage with evidence, not rhetoric. And for Cerf, as a neuroscientist, the core interest remains the same: How does belief change happen? At what moment does someone see the world differently?

"If we can teach people how to see the world from other perspectives, we can actually solve the bigger problem, which is how to bring the world together," says Cerf.

Prediction markets won't solve climate change alone. But they offer something rare: a way to bring facts, incentives, and curiosity together. And for a world struggling to act on the biggest challenge of our time, that might be a bet worth placing.

Adapted from the paper "Participating in a climate futures market increases support for costly climate policies."

Gail O'Neill '76

Investing in the Future

CBS alumni and donors are opening doors for the next generation of business leaders, expanding access, easing financial burdens, and helping students turn potential into impact.

BY KATIE GILBERT

Both Eduardo Sanchez '07 and Gail O'Neill '76 trace many of the benefits they've enjoyed in life back to their Columbia Business School MBAs. Those perks constitute far more than job opportunities, they say.

"It's about how I view and understand the world," says Sanchez, who grew up in the South Texas border town of Laredo. "That dovetails into career opportunities, but it goes beyond my career, too."

These days, both Sanchez and O'Neill are increasingly eager to find ways to extend those benefits to others, which is why they have stepped forward to establish CBS scholarship funds.

Sanchez has established a new scholarship, the Sanchez Family Scholarship Fund, while O'Neill is expanding a fund she previously created—the O'Neill Petals Scholarship Fund. Both alumni are deepening their commitment to supporting future

CBS students through these philanthropic efforts.

"I've been able to see, over the past 20 years or so, the value that my time at CBS has brought to me in the real world," Sanchez says. "I would like to make sure other people are afforded the same opportunity."

During this academic year, more than 15 new scholarship funds have been created, thanks to the generosity of CBS alumni and friends like Sanchez and O'Neill.

The scholarship funds reflect one of Dean Costis Maglaras' top priorities for the School, which is supporting students by increasing financial aid. After all, he says, the strength of the School is rooted in its people—and an exceptional student body is core to that foundation.

"Scholarships allow us to remain competitive and ensure that the best, most deserving students have access to a top business education, which will put them in the leadership ranks of global businesses," Maglaras says.

Acknowledging Real Barriers

While roughly 35 percent of CBS's MBA students receive some form of institutional funding, the School's existing financial aid budget reduces its ability to enroll more talented students with financial need. Adjusting for inflation and accounting for the boost in class sizes allowed by the new Manhattanville campus, the School is awarding a smaller share of aid than it did five years ago.

What's more, the sustained focus on funding the construction of the Manhattanville campus—while well worth the effort and expense—siphoned significant funds that would have otherwise supported student scholarships.

"For the last 15 years, our peers have been building financial aid endowments while we were focused on building Manhattanville," Maglaras says. "We couldn't do both at once."

Maglaras recognizes that for families whose annual incomes fall around the US median—about $80,000—the prospect of committing to $200,000

Eduardo Sanchez '07 with his wife, Vanessa.

in loans for business school just doesn't make sense, regardless of a student's salary prospects after graduation.

"They won't do it," Maglaras says. But as he sees it, that should not mean the door to CBS is closed and locked to these families.

> "Scholarships allow us to remain competitive and ensure that the best, most deserving students have access to a top business education, which will put them in the leadership ranks of global businesses."
>
> **Dean Costis Maglaras**

A Wider Range of Solutions

O'Neill shares a deep commitment to expanding access to a CBS education, believing it's not only vital for students and the School but also essential to society at large. Though she did not receive financial aid herself and used modest student loans, meeting with scholarship recipients has shown her the impact of financial support. Hearing their stories has helped her see firsthand how navigating steep odds to access rarefied educational opportunities can change lives and yield mutual, generative benefits.

She applied to CBS in the 1970s to get an MBA as an indication of interest and intent to enter doors that weren't always obvious or open to women at the time. She recalls that when she was accepted to CBS, women made up about 30 percent of the class—an unusually high figure for business schools at the time. Upon graduating, she started in consumer banking at Citibank, changed to private banking at Manufacturers Hanover and then spent most of the rest of her career in wealth management at Bank of New York.

O'Neill's experience, and those of her peers, reinforced her belief that business schools like CBS have a unique role in shaping society.

"I hope business schools will be a source of solutions in the future," she says. "Business school students need to figure out how to fix things or be part of the path to fixing things. Some things aren't fixable in the short term, but we can still be solutions-oriented and beacons for others."

This hope reflects the very reason O'Neill chose to establish a scholarship fund: "It's a way of attracting the people who have the best shot at getting this done."

Paying It Forward

Christian Carrion-Vera '26 is a current CBS student and recipient of the Robert F. Smith '94 Scholarship. He says the support was essential in reducing both the financial risk and opportunity cost of pursuing his MBA. As a first-generation student and the primary caretaker for his parents, the scholarship gives him confidence that he can meet his family responsibilities after graduation, he says.

"It has also served as a reminder of my responsibility to continue to pay it forward as a member of the Columbia Business School community," Carrion-Vera says. "I truly feel blessed to have the opportunity to study here and to see a pathway to fields that are rarely attainable by people who grew up with public assistance and through the public education system in the Bronx, and I hope to open doors for others."

Sanchez echoes the point about responsibility to the CBS community and says the feeling has only grown since his own graduation.

"Going to CBS is not a two-year exercise," he says. "It's a lifetime choice."

Indeed, Sanchez believes that commitment extends well beyond the classroom.

"If one has the ability to help, in any way possible—whether through time volunteering or through other resources—they should," he notes. "There is a responsibility that comes with checking that box that says, 'I'm going to CBS.' That doesn't expire."

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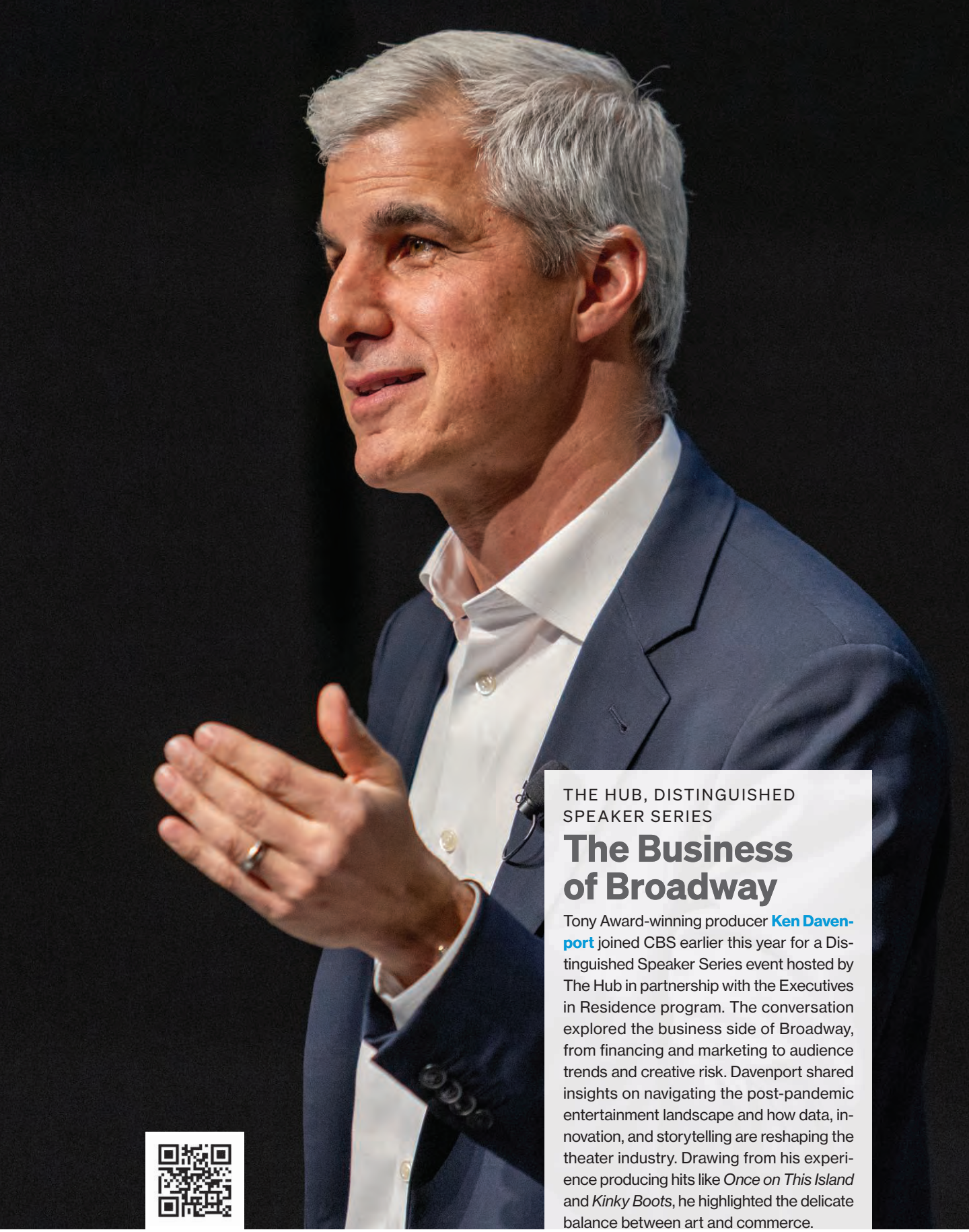
DISTINGUISHED SPEAKER SERIES

Leadership, AI, and the Future of Finance

Jane Fraser, CEO of Citi, joined Chairman Emeritus of Morgan Stanley James P. Gorman ’87 for a Distinguished Speaker Series event in April, drawing students, faculty, and invited guests. Fraser reflected on her leadership journey, the future of global finance, and how Citi is navigating economic uncertainty. She also spoke about the impact of generative AI on banking and the importance of adapting workforce strategies. Throughout the discussion, Fraser emphasized inclusive leadership and the role of large institutions in addressing challenges across business and society.

On this and the following pages, scan the QR codes to watch full videos of each event.



THE HUB, DISTINGUISHED SPEAKER SERIES

The Business of Broadway

Tony Award-winning producer **Ken Davenport** joined CBS earlier this year for a Distinguished Speaker Series event hosted by The Hub in partnership with the Executives in Residence program. The conversation explored the business side of Broadway, from financing and marketing to audience trends and creative risk. Davenport shared insights on navigating the post-pandemic entertainment landscape and how data, innovation, and storytelling are reshaping the theater industry. Drawing from his experience producing hits like *Once on This Island* and *Kinky Boots*, he highlighted the delicate balance between art and commerce.

SILFEN LEADERSHIP SERIES

Shaping Legacy Through Leadership in the Arts

Diana L. Taylor '80, chair of the board of directors of the New York City Ballet, joined Executive Director Katherine Brown for a David and Lyn Silfen Distinguished Leadership Series event in April. The conversation explored their leadership journeys in the arts, finance, and government. Taylor reflected on her trailblazing career in public service and private equity, and how those experiences inform her current work in cultural leadership. She and Brown discussed navigating male-dominated industries, the power of professional networks, and strategies for sustaining artistic institutions.

DISTINGUISHED SPEAKER SERIES

McKinsey's Eric Kutcher on AI, Climate Innovation

Eric Kutcher, senior partner and chair of North America at McKinsey & Company, joined Dean Costis Maglaras to discuss his career trajectory and explore how generative AI is reshaping leadership, strategy, and organizational culture. He shared a striking example of AI solving a complex client problem in hours—work that had taken a McKinsey team weeks—and urged future leaders to treat AI as a cultural transformation, not just a technical shift. Kutcher also discussed demographic and climate challenges, advocating for realistic, inclusive approaches to innovation. The event highlighted the need to reimagine management in a rapidly evolving business landscape.

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GREEN BUSINESS CLUB

A Climate of Change

Nike Chief Sustainability Officer **Jaycee Pribulsky** '01 outlined the company's approach to embedding sustainability into its core operations at a Green Business Club event held in the spring. Pribulsky emphasized that sustainability at Nike is not a siloed initiative but a shared responsibility integrated across all departments, from product design to supply chain management. She also discussed the importance of innovation-led strategies in achieving environmental goals, such as Nike's ReactX foam, used in the midsole of its running shoes. She said the foam's re-engineered formulation not only improves energy return—a benefit for runners—but also reduces carbon emissions in manufacturing.

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DISTINGUISHED SPEAKER SERIES

Scaling with Purpose, Leading with Grit

Randy Garutti, former CEO of Shake Shack, joined Gantcher Associate Professor of Business Jorge Guzman to explore how Garutti scaled Shake Shack from a hot dog cart into a global brand—while preserving quality, culture, and community. He shared lessons in leadership, including the value of volunteering for tough jobs, leading with consistency, and striving to make a meaningful impact. Garutti emphasized focusing on doing one thing exceptionally well and staying authentic during expansion. His insights offered a playbook for sustainable growth and purpose-driven leadership across any industry.

DISTINGUISHED SPEAKER SERIES

Rethinking Work in the Age of AI

Speaking at CBS in March, Walmart's Chief People Officer **Donna Morris** shared how the company is transforming work through AI while staying grounded in its people-first culture. In a conversation with Stephan Meier, the James P. Gorman Professor of Business, Morris explained that Walmart sees itself as "people-led, tech-powered," using tools like internal AI assistants to support over 2 million associates. She emphasized that AI isn't replacing jobs—it's reshaping them to unlock employee potential. Morris also highlighted the importance of communication and values in driving digital transformation, urging leaders to combine technological readiness with a clear, human-centered strategy for long-term impact.

2025 BOTWINICK PRIZE

Business with Purpose and Impact

Clara Wu Tsai, co-owner of the Brooklyn Nets and New York Liberty, was honored with the 2025 Botwinick Prize in Business Ethics during a ceremony at CBS last spring. During the event, Wu Tsai discussed her approach to values-driven leadership, civic engagement, and philanthropy. As founder of the Joe and Clara Tsai Foundation, she has championed causes spanning racial justice, neuroscience, and the arts. The Botwinick Prize recognizes individuals who exemplify ethical leadership in business—a standard Wu Tsai continues to advance across sports, social impact, and innovation. The event was moderated by Modupe Akinola, Barbara and David Zalaznick Professor of Business and faculty director of the Bernstein Center for Leadership and Ethics.

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