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The Climate Call to Action

This past November, at COP27, 100-plus heads of state and government – along with academic and business leaders – gathered at the United Nations Climate Change Conference in Sharm el-Sheikh, Egypt, to find actionable solutions to climate change.

This year, for the first time, I attended the conference with other faculty as part of a unified Columbia Business School. Our presence at COP27, and that of other business schools, will become increasingly common in the years ahead, as the world of business will not only be impacted by climate change but will also be a key driver of long-term solutions.

At COP27, we were inspired by our conversations, including those with our alumni, who are already leaders within the climate and sustainability space. On November 9, I joined Alex Halliday, dean of Columbia Climate School, to host a panel on climate finance, an area of significant strength at CBS. Moderated by Vijay Vaitheeswaran, global energy and climate innovation editor at The Economist, the panel included Nili Gilbert '03, vice chairwoman at Carbon Direct, and Kara Mangone '14, global head of climate strategy at Goldman Sachs. Bruce Usher, the Elizabeth B. Strickler '86 and Mark T. Gallogly '86 Faculty Director of the Tamer Center for Social Enterprise at Columbia Business School, and Andrew Denu, head of climate innovations at SunCulture, joined the panel in a discussion on financing the transition to net zero, including investment vehicles, new technologies, and ensuring an equitable distribution of the benefits from financing and technology. Also, on November 10, Mark Gallogly '86 joined us for a robust discussion on the next generation of climate leaders.

For nearly 20 years, understanding the impact of climate change from a business perspective has been a focus of our School. Today, we're building on that foundation, expanding our climate research and curriculum, developing new partnerships, and continuing to work with alumni leaders in the space. We also believe that increased and frictionless sharing of teaching material will allow our field to move quickly, accelerate the development of human capital, and foster collaboration. That's why Columbia Business School, along with other peer



schools, will open source our climate curriculum, rapidly expanding access to it and increasing its educational impact.

Our commitment to climate and sustainability education is why we've dedicated this issue to the topic, with our cover story on page 34 showcasing the work of our alumni. This includes Satish Selvanathan's Lanka Environment Fund, which supports environmental conservation in Sri Lanka; Nili Gilbert's noteworthy work on carbon removal and reduction; and Wendy De Wolf's achievements at East Light Partners, which handles the first stages of solar project development. In these pages, you'll also find insights from our outstanding faculty, including Shivaram Rajgopal's perspective on ESG investing, Gernot Wagner on Europe's energy crisis, Eric Johnson's work on choice architecture, and an excerpt from Bruce Usher's new book, Investing in the Era of Climate Change.

I am struck by the energy, innovation, and success of academic and business leaders, the individuals on the front lines of combating climate change. When I see the ways our faculty inform the US position on climate change mitigation, direct corporate conversations toward sustainability, and inspire students to raise the bar of achievement ever higher, I am optimistic about our capacity to have a positive impact. And when I consider how our alumni are leading businesses to directly address concerns such as environmental conservation, carbon management, and solar project development, I am energized by their effort.

Together, we are shaping how business and society respond to and influence the work around climate and sustainability, we're helping our students and alumni to develop clear and scalable solutions, and, ultimately, we're changing our footprint and that of the larger world.

Costis Maglaras

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

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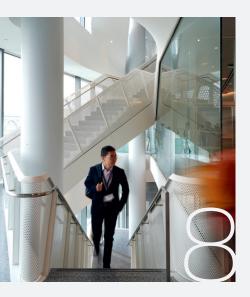
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THE HUB

Tackling Society's Most Pressing Challenges



As corporate leaders around the world face unprecedented challenges, many are learning that the old ways of doing business no longer match the demands of today.

Whereas in the past, company executives may have felt their obligations were primarily to serve customers or shareholders, in recent years greater emphasis has been placed on a larger range of corporate stakeholders, including employees, suppliers, and society at large.

The Hub, Columbia Business School's new think tank, aims to tackle the most pressing challenges facing society. Launched last September, the new initiative will initially focus on the intersection of business and society and is centered in the belief that solving the most vexing questions requires the collaboration of multiple stakeholders.

Housed on Columbia Business School's new state-of-the-art campus in Manhattanville, The Hub will be a center of activity featuring seminars, luncheons, and broader audience events. It will be a home for visiting scholars, business leaders, and policymakers to engage with the School's community and a mechanism for sharing our thought leadership with the world.

Every two years, the dean, in consultation with faculty and key stakeholders, will identify a theme to serve as the Hub's focus for the subsequent period.

"The idea is to bring together scholars, policymakers, and business leaders to address major issues now facing the business world, as well as society," says Oded Netzer, Columbia Business School's vice dean for research and the Arthur J. Samberg Professor of Business.

One of The Hub's first events took place last October, when the School hosted the lecture "The Changing Face of Tyranny in the 21st Century: with Comments on Russia and Ukraine," by Sergei Guriev, a specialist in political economy and the newly appointed provost at Sciences Po in Paris. Guriev discussed his recent book, *Spin Dictators*, which examines how autocrats use the affordances of democracy, such as the media, as tools of disinformation, along with observations on current events in Russia and Ukraine.

Find out more about The Hub at *business*. *columbia.edu/hub*.

KLION FORUM

How Companies Can Handle Modern Workplace Politics

There was a time when workplace conversations about politics were considered taboo.

But the prevalence of social media, where our opinions are expressed openly and often without consequences, means those days are long gone.

Many employees frequently share their thoughts, opinions, and feelings about a whole range of issues online, and they often want their employer to speak out on issues that affect their lives.

The KPMG Peat Marwick / Stanley R. Klion Forum, held last October at Columbia Business School, examined the challenges of discussing political issues — for both employees and company leadership.



"Workers had to show so much of themselves while working from home throughout the pandemic that they started to expect the same of their employer," said panelist Miriam Warren, Yelp's chief diversity officer, during the event.

Warren, along with Emma Goldberg, a writer at *The New York Times*, and Andrea Hagelgans, managing partner of social issues engagement at Edelman, discussed the rise of politics in the workplace during a time of social change with moderator Professor Todd Jick, the Reuben Mark Faculty Director of Organizational Character and Leadership at the Sanford C. Bernstein & Co. Center for Leadership and Ethics.

To some CEOs, speaking out may be easier said than done. But saying nothing may only make it harder, including when it comes to retaining employees.

"If they don't feel their employer is aligning with them politically or socially or at the very basic level of what benefits they'll provide, then they have the opportunity to switch because there are a lot of openings," said Goldberg, who covers the future of work and workplace issues on her *New York Times* beat.

But how should a company authentically respond to a political issue in the first place?

"You don't want companies to sort of fake it, to be sort of performative," cautioned Jick. Hagelgans added that a company better know its track record on the subject at hand.

"If you're a company that wants to speak out during Women's History Month, you better know what your pay equity issues are internally first, because, trust me, Twitter will discover it for you if you don't know already," warned Hagelgans.

Of course, companies have been criticized for slow response times. Nonetheless, Hagelgans cautioned against knee-jerk reactions. She recommends creating committees to interpret and make decisions about certain issues.

"These issues are emotionally charged. Really think through the data around them, and don't make the assumption that we shouldn't speak out on this because we're going to get killed in the media or vice versa," she said.

COMMUNITY

A Fall Celebration of Manhattanville



Columbia University's Manhattanville campus celebrated another Community Day last October with a decidedly fall vibe.

Established in 2018, the event is a celebration of our Manhattanville campus in West Harlem and brings together neighbors, business owners, scientists, artists, and members of the School to celebrate the joy of community.

At last fall's event, attendees had the chance to sample food from Harlem Local Vendor Program participants, including Tres Leches Café and Fauzia's Heavenly Delights, watch movies hosted by the Lenfest Center for the Arts, and delve into the workings of the brain at the Jerome L. Greene Science Center.

SUSTAINABILITY

Columbia Business School, The Square Earn LEED Gold Certification

Columbia Business School's new buildings, Henry R. Kravis and David Geffen Halls, and The Square, a one-acre public green space between the two buildings, were recently awarded LEED® Gold certification from the US Green Building Council.

A LEED certification is the world's most widely used green building rating system. It measures how sustainable a building development is in areas including energy, water efficiency, material selection, and indoor air quality.

All new buildings at Columbia's Manhattanville campus to date have received LEED Gold



certification, including The Forum, the Jerome L. Greene Science Center, and the Lenfest Center for the Arts. In addition, the overall Manhattanville campus plan achieved a LEED-ND Platinum recognition for its environmentally sustainable design – the first higher education institution in the US and the first organization in New York City to receive this designation.

FACULTY

Helping a Superhero Manage Stress

We all know that stress is a fact of life, and while it can have a positive impact on some, for others it can take a significant toll.

So when global movie star Chris Hemsworth, famous for playing Thor and for his roles in *The Avengers*, wanted to learn how to deal with stress more effectively, he turned to Modupe Akinola, Barbara and David Zalaznick Professor of Business and faculty director of the Sanford C. Bernstein & Co. Center for Leadership and Ethics Management, who appears with him in the new Disney+ series *Limitless with Chris Hemsworth*.



In one particularly nerve-racking scene, Akinola challenges Hemsworth to stay calm during a terrifying walk along a crane that's projecting out from the roof of a skyscraper, coaching him on the powerful physical and psychological techniques he can use to control stress and combat the risk it poses to long-term health.

OPERATIONAL EXCELLENCE

Tim Steiner, Kathy Warden Awarded 2022 Deming Cup



In late October, Columbia Business School's W. Edwards Deming Center for Quality, Productivity, and Competitiveness presented Tim Steiner, CEO and co-founder of Ocado Group, and Kathy Warden, chair, CEO, and president of Northrop Grumman, with its 2022 Deming Cup for Operational Excellence Award at a ceremony in Columbia's Low Library Rotunda.

Since 2010, the Deming Cup has recognized leaders for operational excellence and fostering cultures of continuous improvement within their organizations. The 2022 award honors Steiner and Warden for driving these values across their organizations and positioning their companies for growth and long-term success.

The co-chairs for the award's 41-member judging committee, comprising eminent figures in industry and academia, were 2012 Deming Cup recipient Terry Lundgren, founder of the Terry J. Lundgren Center for Retail at the University of Arizona, founder of TJL Advisors, and retired chairman and CEO of Macy's; and 2010 Deming Cup recipient Sam Palmisano, chairman of the Center for Global Enterprise and former chairman, president, and CEO of IBM.

In his congratulations to Steiner and Warden, Professor Nelson Fraiman, director of the Deming Center, commended them for "exemplifying the Deming principles in leading breakthrough solutions within their industries." By honoring Steiner and Warden, "we not only salute the spirit of W. Edwards Deming, but we also celebrate his legacy as we pass it on to our students, the next generation of industry leaders."

Steiner's Ocado Group uses unique and cutting-edge technology to develop an unrivaled online customer proposition to change how people shop for groceries.

Warden launched "Operational Excellence" as a company-wide call to action on new methodologies to enable continuous improvement in quality at all levels. With these processes in place, Warden motivates employees to deliver mission-critical solutions that advance human discovery, like the James Webb Space Telescope, designed and produced by Northrop Grumman, and ones that protect national security, like the B-21 aircraft.

Founded in 1993 at Columbia Business School, the W. Edwards Deming Center promotes operational excellence in academia and business by sponsoring applied research and curriculum creation, disseminating best practices, and providing professional development opportunities for practitioners.

GLOBAL INITIATIVES

'The World Won't Reach Net Zero Without Brazil'

When it comes to climate news related to Brazil in recent years, international headlines have tended to emphasize the country's losses (like deforestation in the Amazon, the world's largest tropical forest), its deficits (lately, in climate-protecting laws), and its warnings (for example, in research about insect decline).

Over a year ago, a group of Columbia Business School students, alumni, and prominent Brazilian leaders across sectors decided it was time to challenge that predominantly negative narrative. They set out to organize an event that could help establish a new narrative — one that is far



more complex, hopeful, and solution oriented.

Their efforts culminated in the Brazil Climate Summit, a two-day event at Columbia Business School this past September that brought together nearly 70 diverse speakers for 16 panels across two days, with 550 live attendees — more than half of them from Brazil — and over 4,000 livestream viewers.

Speakers and attendees included Columbia Business School Dean Costis Maglaras, Professor Bruce Usher, business leaders, entrepreneurs, experts, policymakers, NGOs, and multilateral organizations to discuss Brazil's opportunities and responsibilities in a world where environmental and social impacts are the pillars of a new capitalism.

The panels tackled topics such as technology and disruption, policy changes and incentives to achieve net zero, climate justice, and the potential of the carbon credit economy.

The Brazil Climate Summit was intentionally scheduled just a week before Climate Week NYC, to bring a unified vision of Brazil's future as a climate leader into the proceedings, explains Luciana Antonini Ribeiro, founder of EB Capital, a CBS alumna, and a member of the summit advisory board.

"We know our problems, and we are bigger than our problems," says Marina Cançado, co-CEO of Future Carbon Group and a lead organizer of the summit. Cançado adds that she believes the international community ignores at its own peril Brazil's potential as a climate solutions hub: "The world won't reach net zero without Brazil."

Of course, Brazil also stands to benefit from positioning itself as a leader in the global transition to net zero. According to Boston Consulting Group's "Brazil Climate Report 2022,"

which was created exclusively for the Brazil Climate Summit, Brazil stands to attract between \$2 trillion and \$3 trillion in investments related to the green transition by 2050.

Cançado acknowledges as much: "The green agenda is the driver for Brazil's economic development from now on."

BCG's report highlights Brazil's potential to lead, specifically in exporting ideas and products related to regenerative agriculture, nature-based solutions, green hydrogen, and industrial goods like low-carbon steel and low-carbon cement.

At the event, speakers, attendees, and others delved into each of these areas of potential, discussing their promise, their challenges, and the necessary work ahead.

COMMUNITY

Training the Entrepreneurs of **Tomorrow**

As part of Columbia Business School's ongoing partnership with the Manhattanville community, the School recently launched the First Generation Entrepreneurs Program.

Held this past summer, the new training program teaches high school juniors and seniors essential leadership, business development, accounting and bookkeeping skills, as well as website design.

The program partners with clients of the Columbia-Harlem Small Business Development Center so that students have the opportunity to receive hands-on experience consulting with small business owners in the local area while earning a stipend. Participating students must reside in the neighborhoods of Harlem, Inwood, Washington Heights, the Upper West Side, and the Bronx.

Funded by Wells Fargo Bank and sponsored by Rep. Jerrold Nadler, D-NY, the program not only provides a flexible and stable income stream for participants, but also helps to increase access and representation in entrepreneurship within the local community and among young people of color.

The program held its graduation ceremony at Columbia University's Manhattanville Community Day on Oct. 22, where the high school participants received their certificates of completion and celebrated with their family and friends.

The School will offer the program again in the summer of 2023. Applications open in the spring.











A new home for our alumni and student community







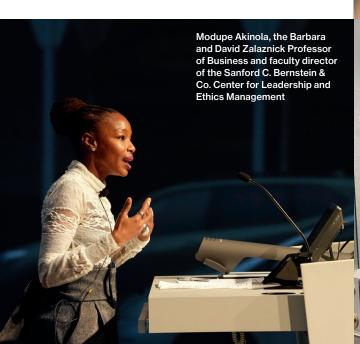


A space for continuous learning, connection, and interaction





A dynamic campus with opportunities to educate, collaborate, and innovate







A New Curriculum for a New Era

The newest classes at CBS are addressing student preferences and meeting changing business needs. **By Laurie B. Davis**



"The mission is to make sure we're getting to cutting-edge topics, but through a curriculum that has foundational building blocks."

Jonah Rockoff, Senior Vice Dean for Curriculum and Programs and the Paul Garrett Professor of Public Policy and Business Responsibility

ccording to the results of a survey published in the 2022 "Tomorrow's MBA" report, MBA students want to learn traditional disciplines but with the addition of artificial intelligence and other new and emerging technologies. They want courses that expand their minds and focus on global challenges; diversity, equity, and inclusion (DEI); ethical leadership; and responsible management.

Columbia Business School didn't wait for that survey, however, to develop a roster of new courses, ranging from technology, innovation, and product management to climate change and DEI in the workplace.

"The mission is to make sure we're offering cutting-edge topics, but always through a curriculum that has foundational building blocks, so students are prepared when they get to those higher-level classes to think critically, to problem solve, to work in teams, and to bring together an abundance of core knowledge for success," says Jonah Rockoff, senior vice dean for curriculum and programs and the Paul Garrett Professor of Public Policy and Business Responsibility at CBS. "Our students progress from A, B, and C to get to X, Y, and Z."

Training the 'CEO of the Product'

"I want to change hiring dynamics," says Chris LaSala, a lecturer in marketing at CBS. His tactic? Establish a product management lab in the product management program that matches students with partner companies to develop new digital products. LaSala is betting the experience will help propel them directly into a product management role after earning their MBAs.

"Product management as a potential occupation for MBAs has burgeoned in the past five to six years," says Senior Vice Dean Rockoff. Once a half-term class, the introductory course to project management has been expanded to a full-term. "They take the foundational class, and then they focus on the lab. It's a lot of time working on a hands-on project," he says.

LaSala, formerly a global product lead at Google, lined up eight partner companies — Bees (AB/inBev), Hulu, Licorice, PTC, Snap, Stripe, Theorem, and ZipRecruiter — for the fall 2022 PM lab. His goal is to attract even more top companies that want to solve customer needs with the help of CBS students, including Columbia alumni business owners who could benefit from working with students as participating executives.

"This creates the perfect environment for students to learn how to deal with ambiguity, learn quickly, manage imperfect information, communicate with busy executives, and work under time pressures while balancing other priorities – just like a real PM," says LaSala.

Rockoff says this is the kind of experience he and other curriculum planners look for in experiential learning opportunities for students. "It's one thing to talk about something in the classroom and to present people with cases. But it's quite another to give them opportunities to get their hands dirty and really collaborate with an external partner who has a real problem that needs solving in real time."

Climate Change Is the Perfect Public Policy Problem

Misguided market forces are the root cause of climate change, according to Gernot Wagner, a climate economist and senior lecturer in economics at CBS. He believes that bringing solutions to the table will require efforts to guide market forces in the right direction, and that students need to understand the rapidly changing global climate policy landscape shaping business to determine how to guide those forces.

This prompted Wagner to design the new Climate Policy course at CBS, which was first offered in spring 2023. In it, he's helping students look closely at the economic principles at play in climate policy and teaching them how to analyze individual corporate and finance efforts. The class dives into international climate change agreements from Kyoto, Copenhagen, and Paris. Wagner and his students also look at how the race to clean energy creates both challenges and opportunities.

In addition to Climate Policy, Wagner teaches Climate Change and the Energy Transition, a foundational course in CBS's Climate Change and Business Program, and plans to launch a third climate elective course next year.

In his opinion, climate, climate change is "the world's most perfect public policy problem" because "it's more global, more long term, more uncertain, and more irreversible than most other issues." He hopes the Climate Policy course will help students understand and analyze both the risks of unmitigated climate change and the risks and opportunities of fast-changing climate policy and regulatory environments.

Six Areas of Breakthrough Innovations

Technology Breakthroughs, which was launched this past fall, combines the expertise of Costis Maglaras, dean of CBS, and Shih-Fu Chang, dean of Columbia's Fu Foundation School of Engineering and Applied Science, in a rare teamtaught course at the intersection of their fields. This cutting-edge course introduces students to new technological ideas and their business applications.

"After three years as dean, where I have been giving the odd lecture here and there, I was really excited to go back into the classroom to offer a new course jointly with Shih-Fu Chang, dean of Columbia Engineering, on Technology Breakthroughs," wrote Maglaras at the start of the term.

Deans Maglaras and Chang, who recently spearheaded the Dual MBA/Executive MS:



Engineering & Applied Science, explore new tech in areas from hardware and software to vast data collection and powerful algorithms, examining how these and other technologies "have been changing every aspect of our lives, every industry, and every possible career path that our students embark upon after their degrees," notes Maglaras.

Each class brings students together with faculty experts, founders, scientists, CTOs, and investors who provide technology overviews, examine how these technologies are implemented in practice today, and discuss the future. Visiting speakers have covered subjects ranging from deep learning and neural networks to computational imaging and computer vision, to Al and robotics, to silicon photonics and blockchain.

Opportunities such as these provide students with insight into current digital breakthroughs and those poised to impact the next decade, preparing them to lead in today's hightech business climate.

Translating DEI Science to DEI Application

In her Diversity, Equity, and Inclusion in Organizations course at Columbia Business

School, Valerie Purdie-Greenaway, associate professor of psychology, integrates the best science behind DEI with ways companies implement it.

She says she teaches "the very best, most current, high-octane science and best practices, so students understand that there is very good scientific, sociological, and empirical evidence related to what works." It's an innovative approach to helping students learn the challenges in translating science and evidence into application within companies.

Many questions revolve around the strengths of DEI programs. Is DEI equipped to handle some of the thorniest questions of our time around ethnic conflict? What are its limits and constraints? Can a startup company afford to care about DEI? Can it afford not to?

In the course, students explore the elements of DEI both in the classroom, through industry studies, and in the field, where they are asked to participate in activities that compel them to experience firsthand the struggles facing individuals and firms. In the past, assignments have ranged from volunteering for a race with paraplegics to dining at an up-

scale restaurant in a gentrified neighborhood.

The course also shows students how companies are using AI, natural language processing, and other types of data analytics to predict things such as who is feeling a sense of inclusion and who is not. "I have some CEOs of startups come in who are using big data analytics to think about representation," Purdie-Greenaway says.

A Map for the Corporate Labyrinth

Professor William Duggan introduces his new course, The Corporate Innovator, with the Greek myth of Ariadne's thread, which showed the way out of the Minotaur's labyrinth.

According to Duggan, "Such is the lot of the corporate innovator. You have a new idea, and you want the organization to take it up and put it into action. But there's no clear way to get there. Every new idea for corporate innovation faces a different labyrinth."

Duggan's Corporate Innovator course helps students move new ideas through such a labyrinth. Course material applies to all types of organizations, at any level or department. Students can use the tools to advance a new idea within large and small businesses, nonprofits, and government agencies. They learn how, as a corporate innovator, they can advance their ideas through an existing system.

"In military terms," adds Duggan, "it's handto-hand combat, person by person through the corporate labyrinth."

Innovation Requires Implementation

Innovative ideas in business also require implementation plans to deliver quality outcomes in a timely manner. To help students understand how to create such a plan in a real-world context, professors Nelson Fraiman and Angela Quintero have partnered with the Columbia-Harlem Small Business Development Center at Columbia University in their course, Process Improvement and Growth.

Open to MBA/EMBA and engineering students, the course organizes students into teams tasked with developing a process for company-sponsored projects. For example, teams might redesign a logistical strategy for distribution with the goal to eliminate inefficiencies, or students might analyze customer feedback and develop solutions that target increasing customer satisfaction.

In addition to the hands-on business projects, Process Improvement and Growth bridges the gap between theory and practice through studying international cases and hosting conversations with guest speakers. The course provides a unique experience for students, who combine skills acquired in other classes to help local companies, while collaborating across disciplines and interacting with company executives.

The Back and Forth of Public and Private Investing

Investment strategies that alternate between private and public markets are increasingly customary in today's financial environment, while investing in private markets has become crucial for traditional equity hedge funds and long-only funds.

At the same time, private markets are becoming extremely competitive and increasingly efficient, leading savvy investors to seek public market capabilities to differentiate funds. To help students learn to navigate hybrid public/private equity investing strategies and situations, the Heilbrunn Center for Graham and Dodd Investing has developed the new course Hybrid Fund Investing: Crossing from Public to Private Markets (and Back Again).

In it, students discuss how public and private investing are similar and different and learn where there are opportunities for unifying elements in the investment process. Case studies offer opportunities for hands-on analysis, so students gain real-world knowledge of investment strategies. Guest speakers also reinforce those real-life situations through presentations.

As the needs of students and the business world continue to change, so too will CBS's curriculum offerings.

"Columbia's curriculum provides structure for students to progress from foundational, long-standing knowledge to the cutting edge," says Rockoff. "Our mission is to make sure the curriculum is reflective of the direction of business and always forward looking."

A Roundup of What's Happening in the Five Pillars

The latest developments, from events and research and curriculum to new programs and initiatives. By Carmen Marti

hen Dean Costis Maglaras, the David and Lyn Silfen Professor of Business, stepped into his role as dean in 2019, he identified a five-pillar framework designed to focus and define the future of business research and teaching at CBS, and thereby inform the future of business practice around the world.

These core pillars – climate and sustainability, the digital future, 21st century finance, entrepreneurship and innovation, and business and society – continue to advance the School's mission to lead business practice into the future.

Here is a breakdown of several of the events, initiatives, and areas of research that recently took place in these pillars.



EVENTS

As last spring's 2022 Climate Business and Investment Conference made clear, when it comes to climate change, green shoots of progress are emerging from the world of business. Industry participants joined faculty members for the one-day event, where they explored business leadership on the path to net zero, including corporate leadership in sustainability, and the role of climate change and social responsibility in decision-making at firms.



The Tamer Center for Social Enterprise's 2022 conference, Capital for Good, took place in October. Attendees explored the ways in which businesses and organizations source capital and examined sustainable solutions to global, systemic challenges.

The Brazil Climate Summit, a two-day event held at CBS, brought together nearly 70 diverse speakers for 16 panels across two days, with 550 live attendees — more than half of them from Brazil — and over 4,000 livestream viewers. The summit included panels on technology and disruption, policy changes and incentives to achieve net zero, climate justice, and the potential of the carbon credit economy.

CBS Dean Costis Maglaras, Alex Halliday, founding dean of Columbia's Climate School, and CBS professors Gernot Wagner and Bruce Usher, joined dozens of alumni working across climate and sustainability in November at the United Nations Climate Change Conference COP27 in Sharm el-Sheikh, Egypt. CBS events at COP27 looked at critical topics, such as how emerging climate solutions can rapidly attract the financing they need to scale and how to develop the next generation of climate leaders.

RESEARCH INSIGHTS

We are generating new insights and research on climate solutions, corporate climate change initiatives, prediction markets, carbon reduction pledges, consumer psychology and behavioral nudging, and clean growth and climate change.

2 | 21st Century | Finance

EVENTS

Last fall, the Heilbrunn Center for Graham and Dodd Investing held the first Annual Kawaja Growth Stock Pitch Challenge. Established by Carl Kawaja '91, chairman of Capital Research and Management Company, the event provided students an opportunity to pitch companies with growth potential to a panel of judges from top firms, including Kawaja; Kelly Granat, co-CIO of Lone Pine Capital; Jeff Nedelman, senior managing director at Certares Management LLC; and Niraj Shah, CEO and co-founder at Wayfair. The winner was Shalin Doshi '23, who pitched Contemporary Amperex Technology

Co. (CATL), a battery manufacturer and technology firm that specializes in manufacturing lithium-ion batteries for electric vehicles and energy storage and battery management systems.

The Paul Milstein Center for Real Estate's 15th annual Alumni Real Estate Symposium featured real estate finance sessions ranging from "Real Estate Debt in the Time of Rising Rates and Volatility," "Global Uncertainty, Real Estate Investments, and Energy Transition," "Sustainability and Real Estate Investments," and "Making Choices in Uncertain Environments." Keynote speakers at the event were CBS alumnus David Simon '85, chairman, CEO, and president of Simon Property Group, the largest US publicly traded real estate company, and Kim Y. Lew, CEO of Columbia Investment Management Company, which manages the endowment of Columbia University

In September, CBS Professor Tano Santos, Meredith Trivedi, managing director of the Heilbrunn Center for Graham and Dodd Investing, and board member Thomas A. Russo took part in the center's annual dinner for the 5x5x5 Russo Student Investment Fund. Each year, students pitch new investments and add five new picks to the fund, gaining real-world experience in value investing, connecting closely with leaders in the field, and generating scholarship money for others at the school.



CURRICULUM

Stijn G. Van Nieuwerburgh, the Earle W. Kazis and Benjamin Schore Professor of Real Estate, developed the pioneering class Real Estate Analytics. Using real estate data drawn from his research, Van Nieuwerburgh teaches MBA and master's degree students to code and run sophisticated problems in the programming language Python to better understand how to formulate and answer critical questions using data.

RESEARCH INSIGHTS

Belief Dynamics

CBS's Kent Daniel, the Jean-Marie Eveillard/First Eagle Investment Management Professor of Business, with co-author Alexander Klos, is studying how disagreement in financial markets evolves in response to information shocks. In their paper, "The Dynamics of Disagreement," in Review of Financial Studies, they find optimists stick with constrained, or limited stock winners an average of about five years, even after a shock, leading to strong persistent negative returns over a five-year horizon. In contrast, pessimists lose faith in the stock relatively shortly after the shock, leading to strong but less persistent negative returns for constrained losers. These patterns in constrained help to explain the return predictability observed in unconstrained stocks.

Maximizing Value

The research of CBS's Suresh Sundaresan, Chase Manhattan Bank Foundation Professor of Financial Institutions, and Kelly School's Zhenyu Wang shows that banks respond to capital requirements by strategically choosing their liability structure, while taking into account the endogenous deposit insurance. In their paper, "Strategic Bank Liability Structure Under Capital Requirements," the researchers provide key insight into how banks strategically respond to capital requirements imposed by regulators and how their response affects their cost of deposit and non-deposit debt.



EVENTS

The Digital Future Initiative, announced last fall, will connect hundreds of faculty members from Columbia Business School and Columbia University with corporate leaders from across industries to help organizations, governments, and communities optimize and accelerate technological advances of the future. Established by a generous gift from alumnus Jake Reynolds '97, with support from Devon Briger '99 and Pete Briger, the initiative focuses the School's research and teaching on the ways technology is altering all industries and the fabric of daily life. Specialized research labs, such as the Briger Family Digital Finance Lab, address key topics, such as algorithmic economy, digital platforms, retailing and digital supply chains, AI and automation, and media.

RESEARCH INSIGHTS

Conventional Accounting & Digital Technology

How much money does a tech company make? That's a difficult question because the biggest outlay, R&D, is expensed. In their paper "Do Digital Technology Firms Earn Excess Profits? Alternative Perspectives," published in The Accounting Review, Shivaram Rajgopal, the Kester and Byrnes Professor of Accounting and Auditing, with co-authors Anup Srivastava and Rong Zhao, explores measures of financial performance in digital tech firms. Employing IRR, or internal rate of return, which they define as the discount rate that equates investments with related cash paybacks over a given period of time, they mitigate the problem of mismatched payoffs and investments, providing an alternative perspective on the performance of tech giants. Their finding? The industry that earns the highest IRR over time is not tech, but healthcare.

Decisions Over Decimals

In their new book, *Decisions Over Decimals: Striking the Balance Between Intuition and Information*, Oded Netzer, the Arthur J. Samberg Professor of Business and vice dean for research, along with co-authors Christopher J. Frank and Paul F. Magnone, Adjunct Professors of Business, assert that uniting data intelligence with human judgment is the key to agile decision-making. Their Quantitative Intuition (QI) approach raises the power of thinking beyond big data, without neglecting data, in an effort to provide ready tools for decision-making moments.

Entrepreneurship and Innovation

EVENTS

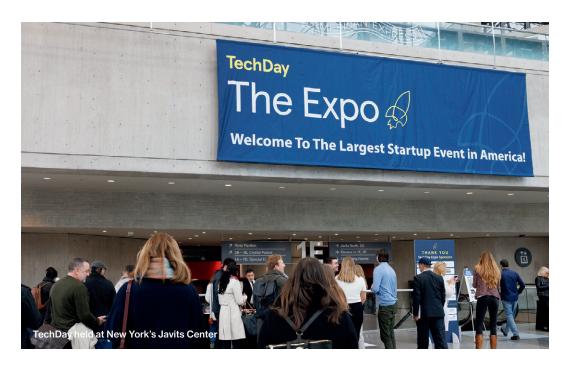
The Eugene Lang Center's CBS Startups Week celebrated entrepreneurship and innovation at CBS. The week featured a series of panels and virtual talks including "Entrepreneurship, Sustainability, and the Fashion Industry," "Diversity

and Investing," and "Best Practices for Reforming the Healthcare Industry." CBS Startup Alley, which took place during TechDay at New York's Javits Center, allowed CBS entrepreneurs to join 300-plus exhibitors to exhibit their concepts and highlight their products currently in development.

RESEARCH INSIGHTS

Cutting the Innovation Engine

CBS's Assistant Professor of Business Tania Babina and her co-authors Alex Xi He. Sabrina T. Howell, Elisabeth Perlman, and Joseph Staudt of the US Census Bureau have been exploring ways that federal funding impacts innovation at universities. In their paper, "Cutting the Innovation Engine: How Federal Funding Shocks Affect University Patenting, Entrepreneurship, and Publications," the researchers find that large, idiosyncratic, and temporary cuts to federal funding in a researcher's pre-existing narrow field of study reduce high-tech entrepreneurship and publications, but increase patenting. These federal funding cuts shift university research funding from federal to private sources and lead to innovation outputs that are less openly accessible and more often appropriated by corporate funders.



5 Business and Society

Business and Society is the inaugural theme of The Hub, Columbia Business School's think tank (see story on p. 3). Three cross-disciplinary initiatives have been formed:

EVENTS

The Future of Capitalism

Led by Glenn Hubbard, dean emeritus and the Russell L. Carson Professor of Finance and Economics, this program will unite business professionals, philanthropic leaders, academics, and journalists to examine whether our current systems for generating innovation and prosperity are still the right ones, and what roles business and government should play in a modern, latestage capitalist economy.

Business, AI, and Democracy (BAID)

Led by Bruce Kogut, the Sanford C. Bernstein & Co. Professor of Leadership and Ethics, in collaboration with CBS professors Ann Bartel, Gita Johar, Andrea Prat, and Andrey Simonov, this initiative will explore whether democracy is in crisis. What is the impact of social and traditional media, government regulation, misinformation, and new and emerging technologies on democracies today?

Think Bigger Innovations

Large businesses and companies recognize and acknowledge the need to innovate, but often struggle with corporate entrepreneurship at scale. Think Bigger Innovations will address this issue, particularly around innovation and how it impacts business and society. Sheena lyengar, the S.T. Lee Professor of Business, will work in collaboration with Shiva Rajgopal, the Kester and Byrnes Professor of Accounting and Auditing, to run the Think Bigger Summit, an annual (or bi-annual) forum.

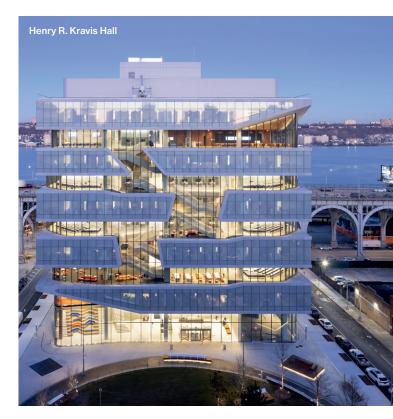
RESEARCH INSIGHTS

Purpose-Driven Hiring

Donna Hitscherich, senior lecturer of finance and director of the Private Equity Program, and Greta E. Larson of the CBS Private Equity Program joined EY Private Equity in a study of whether PE firms focused on purpose-driven investing will focus on purpose-driven hiring. In their research, "Can PE Firms Focused on Purpose-Driven Investing Do the Same for Hiring?" they find that as competition in the PE space increases and firms expand into new strategies, recruiting top talent is moving to the forefront.

The Spillover Effect

Christian Moser, assistant professor of business, along with Niklas Engbom of NYU, found that since 1994 in Brazil, a doubling of the minimum wage has spurred a large decline in earnings inequality. Their paper, "Earnings Inequality and the Minimum Wage: Evidence from Brazil," shows that minimum wage policies can create more equality in the workplace without significant disemployment effects.







The unique program provides students with the critical skill set needed to meet evolving business demands.

By Laurie B. Davis

abies grow up fast, and as each milestone passes, parents often amass baby clothes, toys, gear, and all types of infant and toddler products that quickly lose their utility.

Columbia Business School alumna Carolyn Butler '18 hit that point after the birth of her daughter, when she also discovered that options to recycle children's products were nonexistent. That's when she merged a 15-year engineering career with her MBA skills to launch America's first circular retailer, Borobabi (now Manymoons), a public-benefit, venture-backed company rooted in the concept of borrowing instead of owning.

"Coming from chemical engineering, where almost everything is recycled, I knew that I could take those principles of circularity and recycling and apply them to an industry that was so alarmingly linear and wasteful, like fashion," says Butler.

Butler's venture is a prime example of the type of outcomes that Columbia Business School and the Fu Foundation School of Engineering and Applied Science aim to see with the new Dual MBA/Executive MS in Engineering and Applied Science program, which launched last summer.

Faculty will welcome the first class in fall 2023, teaching both business skills and cutting-edge science to those who want to launch new companies or lead an established technological enterprise as a vice president of engineering, COO, CTO, CIO, or senior product manager. The aim is to address the high demand for leaders with broad management skills and technical expertise across industries.

Dean of Columbia Engineering Shih-Fu Chang says the new 20-month degree program will emphasize four key elements: societal challenges, breakthrough technologies, leadership, and a humancentric design approach. "We think of this program as something that is targeted toward solutions that people will adopt and use, so design is an important component," says Chang.

The program will offer a broad overview of engineering rather than focus on specific specializations. Students will learn about the engineering design process, understanding and identifying how to solve an engineering problem.

This training will be matched with business education and skill development in leadership, strategy, marketing, and management, says Costis Maglaras, dean of Columbia Business School. He adds that students also will receive unparalleled access to business leaders, entrepreneurs, and investors, uniquely preparing them for their future roles.

"Our dual MBA/MS degree provides strong simultaneous expertise in engineering and business, offering the ideal background for a career of impact," Maglaras adds.

'Extraordinary Demand'

Bob Bakish '89 is president and CEO of Paramount Global, one of the world's largest media companies. A graduate of both Columbia Business School and Columbia University's Fu Foundation School of Engineering and Applied Science, Bakish emphasizes how his combined skills in business and engineering have served him well in his career.

His operations research engineering degree, earned in 1985, taught Bakish the analytical skills to problem solve, while his MBA provided essential skills in finance, accounting, marketing, and general strategy, he says.

"Over the past 25 years, it's about looking at situations and solving problems. It might be revenue related, cost related, about margins, or about growth, but having that combined toolkit has been tremendously important," says Bakish.

Bakish says the combination of engineering and business skills intersect with what people need to focus on when they say they want to grow in their careers.

"What I always say is, 'You need to focus on building your brand. Be the person people depend on, put in the extra hours, be flexible, such that when they have a hard problem or incremental work, they turn to you. With a broader toolkit, you can solve more problems, you can add more value, you can be the person they depend on."

Columbia Business School alum John Chrin '88, who studied engineering at Lehigh University, has developed his own professional perspective on the needs of modern-day employers, having worked at high-level positions in the financial services industry for many years. He knows that smart, talented business leaders who can work alongside technical experts and make decisions about when to invest time, money, and

other resources into a particular project have an advantage in today's business environment.

A partner at Circle Wealth Management, Chrin says that the financial services industry has led in the recruitment of people with technical expertise, adding that demand for people with both business and tech acumen continues to rise. Individuals who, in their work, apply the two critical skills of analytical rigor and attention to detail, he says, "are in extraordinary demand across the spectrum of all industries."

Chrin envisions benefits for society when dualdegreed professionals branch out to work in industries beyond finance. "I believe that over the next 10, 20, and 30 years, there's going to be a redirection of that talent back to more traditional product and services companies, so the United States can ensure its competitiveness within the global economy," Chrin says.

Innovations That Impact Humanity

With technology-forward organizations often composed of cross-functional teams, the business leaders of tomorrow will need to engage and collaborate with engineers and data scientists to produce collaborative, innovative work, says Dean Maglaras.

"Engineering innovations are driving change and disruption across industries and functional roles," he says, noting that many of those innovations address challenging problems and provide solutions that improve on past business processes.

Teaching students how to explore and develop emerging technologies that could be used to solve real business problems is a core tenet of the new dual degree program, and it lives up to Columbia Engineering's mission to develop innovations that impact humanity.

The Dual MBA/Executive MS in Engineering and Applied Science degree program is focused on producing professionals such as Manymoons founder Butler, an engineer with experience and training who launched a company with societal and environmental impact by obtaining critical business skills.

Deans Maglaras and Chang look toward the future with the hope of educating and inspiring more leaders like Butler, who can help change the world.

Financing the World's Future



Investing in the era of climate change offers the opportunity and challenge of a lifetime, says Bruce Usher in his new book.

he planet is warming, and many changes are coming that will be highly disruptive at best and catastrophic at worst. For investors, the next 30 years will be a time of increasingly rapid change, just as the past 30 years was, but for a completely different reason.

Austrian economist Joseph Schumpeter described capitalism as a process of "creative destruction" in which technological innovation by new companies drives older firms out of business. Schumpeter believed this to be "the essential fact about capitalism." Investors have proved him right, financing innovative companies that created enormous shareholder value while simultaneously destroying businesses that failed to compete. Schumpeter developed his economic theories in the 1940s, but it was a half-century later that his concept of creative destruction reached its zenith, with the advent of the digital age.

In 1998, Kodak's market capitalization was \$26 billion and Apple's was \$1 billion. Within 20 years, Kodak was forced to declare bankruptcy and Apple was the most valuable company in the world. Film, the heart of Kodak's business, was replaced by digital photography and Apple's

iPhone. Technology and the process of creative destruction destroyed one American icon and created another.

But this was not just about one successful company or one sector of the economy. Digital innovations affected every business in nearly every way, dramatically changing the value of financial assets. By 2020, the five most valuable companies in America were in technology. Climate change is unleashing Schumpeter's creative destruction once again, and as with the digital revolution, great wealth will be made, and lost, in this process.

Creative Destruction: 2020 - 2050

Predicting the growth of climate solutions such as renewable energy and electric vehicles is relatively easy. Predicting which companies will dominate those market sectors is much harder, as it was for selecting market winners in the past.

Investors in the 1990s understood that digital technologies would be an increasingly important factor in business, yet it was hard to know which companies to finance. Netscape was the leading internet company in 1996 with nearly 80 percent of the browser market. Five years later, the company was nearly worthless. Google was another company with an internet browser, but with a very different outcome for investors. Every investor wants to believe that they would have avoided Netscape and purchased shares in Google.

The era of climate change will force investors to make similar investment decisions, assessing the risks and opportunities in a rapidly changing environment. *The Economist* summed it up neatly: "Like the internet, decarbonization will lead to structural change in the global economy. Capital will have to flow towards cleaner technologies. The process will create winners and losers."

Climate change will affect investors in a process of creative destruction that will last for at least the next three decades. Investments will be affected by climate change, and investors will affect climate change. The key question, perhaps the only question that really matters, is whether investors will have enough of an impact.

There are many reasons for doubt. The relentless growth in greenhouse gas emissions and the inability of governments to reach a binding international climate agreement to lower emissions despite nearly 30 years of negotiations offer little hope for the future. Humanity is further burdened by a biology that struggles with challenges such as climate change. But all is not lost, as the writer Matthew King makes clear: "It's important to remember one thing, however. It's true that no other species has evolved to create such a large-scale problem but no other species has evolved with such an extraordinary capacity to solve it, either."

Humans have the solutions to avoid catastrophic climate change, but it is unclear whether humanity will implement those solutions in time. The greatest challenge by far is the inconsistency of government support. This creates uncertainty, delaying investment and losing precious time. The good news is that the emissions curve finally appears to be bending downward because of recent trends that are prompting financial leaders to act, offering the first glimpse of a low-carbon future. Unfortunately, we may not get there in time.

We Are Our Own Worst Enemy

Doubters, on both sides of the climate debate, make the path forward significantly harder. Climate denialists have slowed the implementation of sensible government support for climate solutions by sowing uncertainty and confusion. The denialists are losing influence as the science of climate change becomes more widely understood, and as the physical effects become increasingly apparent, but much time has been lost in the process.

At the other extreme, climate defeatists are ignorant of the advance of climate solutions and the potential for human ingenuity. By resigning themselves to catastrophe, the defeatists remove the desire to address catastrophic climate change until it becomes too late, creating a self-fulfilling outcome. Unfortunately, defeatists are becoming more influential as the climate warms.

The vast range of opinions and debates over climate change is wasting the most precious resource of all: time.

Time is tight, but the window has not yet closed for avoiding catastrophic climate change. The momentum that exists in low-carbon technologies, changing social norms, and government support represent a turning point in the global greenhouse gas emissions, putting rescue within reach. Columbia University climate scientist Kate Marvel neatly summed up the situation when she tweeted: "As a climate scientist, I'd like you to know: I don't have hope. I have something better: certainty. We know exactly what's causing climate change. We can absolutely 1) avoid the worst and 2) build a better world in the process."

Without doubt, this process will be slower than it should be due to international rivalries, inadequate coordination among nations, and pushback from businesses losing out in the transition to a low-carbon future. But humanity can avoid catastrophic climate change because it now has the solutions to do so. The delay in reducing emissions will necessitate the aggressive use of costly carbon removal solutions to reach net zero, making the path to a low-carbon future slow and costly rather than quick and cheap. But there is a path forward.

The Future

Scientists have discovered the causes of global warming and have made clear what must be done if humanity is to avoid a catastrophe. Engineers have invented climate solutions. Entrepreneurs and business leaders have created commercial applications. Politicians are reacting to changing social norms by providing more government support. Momentum is building for a rapid implementation of climate solutions at scale. The transition to a global low-carbon future has begun, providing investors in the era of climate change with the opportunity and challenge of a lifetime. Investors financed the extraordinarily successful Industrial and Agricultural Revolutions of the past, and now investors have an even more important role: financing the world's future.



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Using Behavioral Science to Encourage Smarter Climate Choices

The Sustainability And Behavior Laboratory is using effective strategies to tilt consumers toward pro-climate decisions.

By Toni L. Shears

f you ask people how concerned they are about global warming, research shows that their answer often depends on the weather that day.

If it's warmer than usual, people tend to report higher levels of concern, says Eric Johnson, the Norman Eig Chair of Business and director of the Center for Decision Sciences at Columbia Business School. "You believe what you feel, not the climate record of the last 30 years."

Further studies have confirmed this phenomenon, termed the *local warming effect*, and found that people will act on their concern by donating to environmental causes. So, how do we persuade people to adopt climate-friendly habits without waiting for a blistering heat wave to convince them?

Johnson and a multidisciplinary group of experts in marketing, management, and consumer research at the School are deploying tools of choice architecture — the framing of choices in order to guide the outcome of a person's decisions — to test ways of guiding individuals toward environmentally protective actions.

Structuring Good Choices

Johnson, a psychologist by training, and colleagues from marketing, management, consumer research, and other fields founded the School's Sustainability And Behavior Laboratory (SABLab) in September 2021 with a startup grant from the Tamer Center for Social Enterprise. Its aim: to test how various techniques can help consumers make climate-friendly choices.

The team includes Vicki G. Morwitz, the Bruce Greenwald Professor of Business, and Gita Johar, the Meyer Feldberg Professor of Business, both experts in consumer psychology and behavior; Michael Morris, the Chavkin-Chang Professor of Leadership in the CBS Management Division, who also holds an appointment in Columbia's Department of Psychology; and several graduate students and postdoctoral fellows.

Leveraging their varied expertise in probing consumer choices, the new lab conducts behavioral experiments designed to reveal ways to help governments and businesses shape policies and product options to help people make socially beneficial choices.

The Research

Individual actions matter: Research shows that if an additional 10 percent of Americans make small changes, it will reduce US emissions exponentially – by nearly as much as the combined annual emissions from New York, Los Angeles, and Chicago.

Unfortunately, early research from the SABLab suggests many of us "really don't have a clue" about which actions actually make a difference, Johnson says. "Even if they are really well intentioned, people don't know what they should do to actually minimize emissions. They think of things like recycling as being more important than it is, when minimizing food waste and reducing the amount of meat that you eat is more effective."

The lab is therefore studying ways to highlight the most sustainable option through choice architecture — smart ways of designing the order, presentation, or description of options to subtly guide a decision-maker's choice.

Examples include:

- **Defaults.** Pre-selecting the socially or environmentally desirable option as the default choice can have surprisingly large effects. For example, researchers asked people to choose between green electricity and power from non-sustainable sources. By pre-checking the green energy box and requiring customers to explicitly opt out of that choice, researchers saw a 75 percentage point swing to the clean option even though it would cost 10 percent more.
- Framing. People hate losing something they have more than they value something new they are given. Using this well-studied principle of loss aversion, the researchers worked with architects and engineers in a study structured

specifically to influence behavior. Instead of awarding points for choosing, say, a higher -efficiency window, they subtracted points for low-quality choices. The number of windows picked with the highest insulation rating rose 27 percent.

Shaping Products and Policy

Beyond the lab, such behavioral science drives modern marketing and informs both businesses and governments.

Previously, Johnson worked with a German auto manufacturer to help it structure defaults that led buyers to select smaller, cleaner engines when ordering cars online. In September 2022, as an Einstein Visiting Fellow based at Technische Universität Berlin, Johnson helped develop approaches and tools that assist governmental branches and businesses in implementing measures to reduce individual or industrial carbon dioxide emissions.

Johnson offers more practical advice on creating effective choice architecture for businesses and policymakers in his 2021 book, *The Elements of Choice: Why the Way We Decide Matters.*

The new lab builds on this powerful and practical line of inquiry with a platform that harnesses collaborative energy across disciplines. "We're really talking across boundaries and learning from one another, but much of our group is in marketing or studies consumer behavior, so our focus is on shifting [consumers'] choices," Johnson notes.

Individual consumer choices have less impact than corporate and governmental climate actions — but they add up. "And no matter what products our firms build or design, somebody has to buy them," Johnson says. "So sustainability has to start with consumers."

What helps cut carbon?

How well do you know what is better for the environment?

Research from SABLab asks ordinary people what they think reduces greenhouse gasses. For example:

What reduces greenhouse gasses more?

Taking one less flight a year, orReducing your annual waste by 25%

The answer may surprise you.

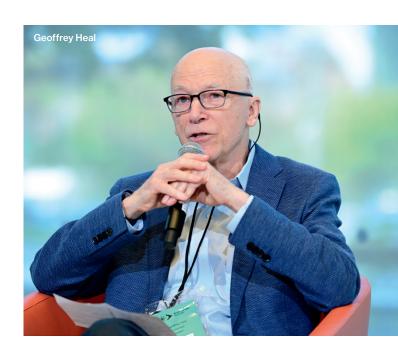
Find out and learn more about how to curb your emissions by taking our quiz:



Addressing Society's Toughest Challenge

The School's Climate Change and Business Program delivers value for society and students.

By Laurie B. Davis



n 2018, Columbia Business School Three Cairns Climate Fellows Kaitlin Butler '19 and Mucka Gantumur' 19 partnered with the small staff of the Rhode Island Infrastructure Bank to create a risk model for funding climate resilience issues across the state.

Facilitated through the School's Climate Change and Business Program, the partner-ship put Butler right where she wanted to be to understand what climate finance entailed and to answer questions surrounding ESG (environmental, social, and governance) investing.

"I knew I wanted to move millions — really, billions — of dollars into the fight against global warming," says Butler. "I wanted to know what those opportunities were and what those career paths could look like."

Butler met those needs in the Climate Change and Business Program. "The School totally nailed it as far as meeting student needs," Butler says. Since graduating from CBS, she has gone on to New York State's Green Bank, where she works today.

According to a May 2021 article published in the *Financial Times*, since 2019, the number of business school graduates choosing a career in the oil and gas industry has fallen by 16 percent and by 40 percent since 2006. In addition, the data show millennials and Generation Z placing ever-greater focus on climate change as they enter the MBA jobs market, with a 20 percent increase in students recruited into the renewable and environmental industries over the past 15 years.

In a survey conducted by LinkedIn for the *Financial Times* article, Columbia Business School is among the top schools to graduate MBAs in this space, with more than 1,200 alumni in climate and sustainability professions. Like Butler, these alumni are establishing successful careers at the intersection of climate change and business, sharing with faculty and alumni the goal of mitigating, adapting to, or reversing climate change and its impacts.

More and more graduates in sustainability are necessary to stem the rising tide of climate change, according to Sandra Navalli '03, managing director of the Tamer Center for Social Enterprise, which houses the Climate Change and Business Program. She derives a sense of hope from Columbia Business students in the program, who demonstrate their passion for solving climate change issues. "The mindset we teach is, 'OK, it's a big problem, but let's break it down," she says.

Knowledge and then putting it into circulation. The courses are very important because we're putting out 700 or 800 students a year now who are all conscious of issues related to climate change.

Geoffrey Heal, the Donald C. Waite III Professor of Social Enterprise at Columbia Business School and faculty leader of the Climate Change and Business Program

For alumni of the program who want to be connected with like-minded graduates, the Climate Practitioners Network offers special programming, such as the Climate Business and Investment Conference coming up in April. For more information and to stay informed, visit business. columbia.edu/socialenterprise.

Building a Curriculum

Columbia Business School's climate curriculum has been expanding since 2004, when Geoffrey Heal, faculty leader of the Climate Change and Business Program, and Bruce Usher, the Elizabeth B. Strickler '86 and Mark T. Gallogly '86 Faculty Director of the Tamer Center for Social Enterprise at Columbia Business School, introduced the first classes specifically designed around business and climate.

Since then, the School has created and introduced case studies that expose the disruption, challenges, and opportunities due to climate change through distinct topics, such as retail and sustainability, marketing and greenwashing, externalities, and corporate finance and valuation in solar.

The Tamer Center also supports faculty research focused on climate change, with up to \$200,000 in funding for six projects awarded

last year. "The program is developing knowledge and then putting it into circulation," says Heal. "The courses are very important because we're putting out 700 or 800 students a year now who are all conscious of issues related to climate change. We couldn't do that unless we had faculty who were actively researching in the field and building student exposure." Today, CBS has committed to integrating climate change and its impact in each MBA core curricular area, including marketing, operations, finance, accounting, and management.

Learn as You Do

Each of the Climate Change and Business Program's four com-

ponents — curriculum, experiential learning, research, and outreach and networks — helps prepare students to succeed in professional roles that work on climate change mitigation and adaptation. According to the Association of Climate Change Officers, this preparation requires foundational skills, such as environmental literacy and understanding of the policy landscape; organizational capacity in areas such as decision-making, compliance, and asset management; and strategic execution competencies such as organizational change management, risk mitigation, and external relations.

"Environmental problem solving is infused in everything we do," says Navalli. "I'm optimistic we will come together as a collective business community to push the needle on getting solutions implemented and scaled. It's all very doable, but it's not magic." It takes MBA courses and faculty such as those in the Climate Change and Business Program to train students to dig deep into the big questions about climate change and think about how best to deploy the business community in the climate call to action.

Is Europe's Energy Crisis Forcing a Green Industrial Revolution?

Climate economist **Gernot Wagner** discusses the implications of the Ukraine conflict for the climate debate.

By Katie Gilbert

espite concerns about Europe's energy stability this winter and beyond following Vladimir Putin's invasion of Ukraine, Columbia Business School climate economist Gernot Wagner sees signs of a "green industrial revolution" finally underway in the West. The stakes of the climate debate are shifting, he notes – though he adds we'd be forgiven for failing to fully notice it given the stream of grim headlines.

In the following conversation, Wagner, a native of Austria, describes how a transatlantic divergence on climate recently became a clean-energy race, why European leaders missed an opportunity in their response to Putin's invasion back in February, and why he's hopeful about the green industrial policies finally taking shape in the United States and elsewhere.

CBS: Do you think Russia's invasion of Ukraine could hasten the West's transition to cleaner energy?

Gernot Wagner: Yes, I do. And my answer would have been very different if we'd had this conversation before August.

Between February 24, when Russia invaded Ukraine, and July, it had become increasingly obvious that the United States and Europe were taking two completely different paths. Europe as a whole, and most of its individual countries, used it to do some of the things that everyone knows are necessary for both national security and the climate. Putin's invasion of Ukraine sped up the energy transition in Europe.

Whereas in the United States – and again, this is a pre-Inflation Reduction Act view of the



world – very little of that happened. The United States is more isolated, more insulated from what happens in Ukraine.

Only about 10 percent of our imported oil came from Russia and basically none of our gas. Biden declaring an oil and gas import ban is much easier to do than, let's say, the Germans doing it. So there was no plan to double down on energy transition domestically. If anything, it was the opposite. It was basically, let's build more liquefied natural gas terminals; let's pump more. That difference even showed up in stock market prices. European clean-energy companies performed better right after the invasion; US ones didn't.

Fast-forward to after the signing ceremony for the Inflation Reduction Act and the transatlantic divergence has become a clean-energy race that the United States has finally entered.

As of December, it seems both the United States and Europe believe they're in this together and want to use the current gas energy crisis as a reason to transition and do what is necessary — fast.

CBS: Some environmentalists fear that the fast-action solutions Europe has taken to shore up its energy supply could cement dirty energy systems in place. For instance, European countries are devising the short-term fix of floating terminals to receive liquefied natural gas from other countries, especially the United States. Do you share this concern that Europe may not be doing enough to go the clean-energy route?

Wagner: I'm much less concerned about what happens in any given year than about the trends, about bending the curve. The COVID lockdowns

in April and May 2020 cut emissions; Europe running coal plants longer increases them. Neither has much of an impact long term. What matters is how what we do affects the trajectory. Does building that gas terminal lock us into yet more gas for longer, or might it be used for green hydrogen someday soon?

Overall, of course, a lot more is needed. It's so late in the clean-energy race. This is not Eliud Kipchoge figuring out how to break his own marathon world record. This is us playing catch-up, all the way from the back.

And yes, there were many missed opportunities along the way. Imagine if on February 25, the day after the invasion, when everyone was shell-shocked, European leaders didn't just ask for us to defend democracy but actually suggested real steps? French President Macron, say, could have said, "We are asking all French, Germans, Europeans who can to work from home starting Monday morning. We are not heating our offices, nobody is driving to work, and we will take the savings and half will be donated to Ukraine and the other half will be spent on building insulation and heat pumps."

But those emergency measures didn't happen for months. That's a huge missed opportunity. Beginning over the summer, in anticipation of a cold winter, we did see calls for people to conserve. That should have happened the day after Putin's assault on Ukraine. And now that we are in the crisis, the conundrum is we have to provide relief for those not able to afford their energy bills without creating adverse incentives. You do not want to lower prices at the margin and encourage more demand. In the end, the best cure for high energy prices is high energy prices.

As an economist, what you want to do then is lump-sum transfer funds back to households. That's hard to implement politically, when people see the high gas bills. I don't envy any politician facing this right now. They're going from fire to fire, from crisis to crisis. And yes, the key is to use this crisis as an opportunity to say there are some things we could and should do and to try to make things better.

CBS: Given that the behavioral and policy changes that we know need to happen have

proved so elusive, is it a question of whether countries, and especially the West, can mobilize to meet these types of challenges if we're not already facing a crisis?

Wagner: Change is hard. We are in a situation where we know that we need to change our ways, stop with the status quo of privatizing profits while socializing costs left and right. We know we need to change policies; we need to be better at pricing risk, internalizing externalities.

This progress happens in fits and spurts, but we are indeed making progress. We're making progress on security issues in Europe. We're making progress on clean energy. But finding the right balance is really, really hard substantively, and it's even harder politically.

CBS: Do you see any reasons for optimism?

Wagner: What makes me hopeful is that business is indeed seizing the opportunity. Yes, it takes policy, and with the passage of the US Inflation Reduction Act, the passage of the CHIPS Act, and the passage of the bipartisan infrastructure bill, we are pivoting, and pivoting fast, toward green industrial policy in this country. Europe has been doing it for quite a while longer, and China and other countries too are engaged in this push.

Then look at business engaging in all sorts of other ways. After moving from a policy to a business school this past summer, I didn't expect to once again attend a United Nations climate meeting. But yes, Columbia Business School had a significant presence at COP27 in Egypt this past November, hosting panels on financing the transition to net zero and the skills and resources future climate leaders will need to create measurable change in their communities.

Ultimately, of course, it is the interplay of policy harnessing private interests and channeling market forces in the right direction that will make the real difference. We're at the very beginning of this global clean-energy race. Success is not guaranteed, and not everyone will be an economic winner. But we're looking at hundreds of billions of public investment dollars leveraging trillions of dollars worth of private investments. That's an exciting opportunity if there ever was one.



IODAY'S CLIMATE LEADERS

rom early in his career, Ron Gonen
'04 felt a growing desire to build a
successful business addressing
problems related to climate change
and sustainability. But when he
would share his dream, he sometimes encountered blank stares or more-pointed skepticism. How could a business with a climate mission make money?

Committed to his vision, he pressed on, leaving his role as a consultant at Deloitte in 2002 to enter Columbia Business School and learn the skills necessary to become an entrepreneur. He would eventually found Recyclebank, a company that promotes recycling, and Closed Loop Partners, an investment firm that's working to scale up the circular economy.

"I've never doubted the opportunity," Gonen says. "If you start from a place where you feel

this is your cause, you never waver from what you're trying to accomplish even as you go through trials and tribulations."

Like Gonen, the CBS alumni profiled here are among a new generation of climate leaders who have – often against the odds – managed to build businesses and careers on answering the call to solve this global challenge.

Of course, coming to grips with a problem as massive and multifaceted as climate change will require input and solutions from a broader swath of alumni within the CBS community than those we were able to include in this issue, and from a much wider variety of industries and forms of expertise.

These alumni are demonstrating just how that can be done, whether as an entrepreneur, a philanthropist, an investor, or the CEO of a Fortune 200 company.



SATISH Selvanathan has a knack for a dramatic turnaround. During his time at Columbia Business School, he enrolled in a class on turnaround management and promptly fell in love with it. "That's the only thing I've done since I left," he says.

Today, Selvanathan channels this passion into his fourth-generation family business, Goodhope Asia Holdings, where — as executive director, based in Malaysia — he has been responsible for the turnaround of its businesses in Malaysia and Indonesia.

Selvanathan is among the first generation in his family to have studied and worked outside of Southeast Asia. After spending the first 16 years of his life in Sri Lanka, Selvanathan graduated from Oxford University, earned his MBA from Columbia Business School, and worked in private equity, management consulting, and investment banking in New York and London.

Upon joining the family business in 2018, Selvanathan brought with him an acute understanding of the negative reputation in the West surrounding the palm oil industry — a significant portion of Goodhope's business. He'd noticed that when he mentioned his ties to the palm oil industry, roughly half of the responses he received were characterized by curiosity and thoughtful questions; the other half, horror and avoidance of the topic. He wanted to do what he could to start to shift entrenched perspectives on — and practices within — palm oil production, the longtime lightning rod of the edible oils industry.

"About 240 million tons of oil are produced every year, of which 80 million is palm oil," Selvanathan says. "That's a third of the market! We have to have this conversation."

In his role overseeing the turnaround of Goodhope's business, Selvanathan prioritized improvements to its sustainability practices. He has pushed for investments to improve the efficiency of the company's mills, to achieve full

traceability of its agricultural raw material and to capture methane from effluent ponds on its properties, which can then partially replace diesel generators as a power source on remote sites. He hopes that within the next few years, this process can help bring the company's diesel use down by 70 to 80 percent.

The investments in sustainability are good from a business perspective, too, he emphasizes. "I'm not going to pretend that this is done entirely for altruistic purposes," Selvanathan says. For one thing, the investments in decarbonizing will translate into lower energy costs long term, and improved sustainability credentials enable price premiums. But beyond that, they mean that Goodhope's palm oil companies are honing a competitive strength: Although the companies aren't poised to compete on size or scale, they do compete on sustainability.

"I don't think there's a choice that needs to be made between doing well and doing good," Selvanathan says. "I think you can do both. And in fact, I will go as far to say that you can do better by doing good."

Taking these steps in turning around the business led Selvanathan to consider other areas where his turnaround skills might be needed. This led him to the environmental conservation space.

In June 2019, Selvanathan co-founded, with Ben Goldsmith, a nonprofit called the Lanka Environment Fund. The organization has spent over \$500,000 (including institutional grants) to support environmental conservation work in Sri Lanka, Selvanathan's first home and one of the world's 35 biodiversity hotspots. The grants have funded marine and terrestrial conservation, improvements in waste management, and responsible tourism initiatives.

"I felt that this was an opportunity for me to inject commercial rigor into how conservation was being done," Selvanathan says.

In co-designing the nonprofit, he emphasized a need to conceive of specific environmental targets, define clear steps to get there, and measure outcomes. In other words, he was seeking to bring a turnaround not only to ecosystems that needed healing, but to the world of philanthropy, too.

"It's very easy to spend money," he says. "It's less easy to spend money effectively."



AFTER LEADING in the sustainability field for over 15 years, Nili Gilbert is now embracing the opportunity to influence change in the global economy on a larger scale as vice chairwoman of Carbon Direct.

Carbon Direct, founded in 2019 by Jonathan Goldberg (who sits on the advisory board at Columbia's Center on Global Energy Policy), is a carbon management company dedicated to making climate science actionable through two separate businesses: The first assists clients (mainly companies and municipalities) with their decarbonization goals, and the second invests to build up the industry of companies that can help them do so. Both businesses are supported by a team of over 30 carbon scientists.

Before joining Carbon Direct, Gilbert spent 10 years as co-founder and portfolio manager of Matarin Capital, an investment firm that became one of the larger women-owned asset management firms in the US.

During her time at Matarin and long before it, Gilbert had been a proponent and a practitioner of ESG investing, which takes into account environmental, social, and governance factors. By 2020, however, she was harboring persistent doubts that even the explosive popularity of ESG would be sufficient to push the changes necessary to limit global warming to 1.5 degrees Celsius, the goal of the Paris Agreement.

"What we really need to do is reimagine and rebuild the whole global economy in a way that pushes toward net zero emissions, while also addressing the longstanding social inequities that our high-emitting economy is built on top of," Gilbert says. "And this is not a work of tweaking around the edges; we're talking about a deep redesign and deep rebalance from something old into something new."

She'd noticed that even investors excited about adopting an ESG lens were still sensitive about their portfolios' performance against the most common market benchmarks — "but the benchmark itself is dirty," Gilbert says. She discovered that if she were to take a snapshot of the broad market indexes as a proxy for the global economy, the world would be set to warm by around 4 degrees Celsius, significantly above the 1.5 degree goal. "We need to do something completely different to get to where we need to go," Gilbert says.

For a year before joining Carbon Direct, she worked within the UN system, and still serves as chair for US policy of the UN-convened Net-Zero Asset Owner Alliance and as chair of the Advisory Panel of technical experts for the Glasgow Financial Alliance for Net Zero, crafting the standards for financial institutions that have pledged to decarbonize.

Even as she did this work, a question still nagged at her: As the economy transitions away from fossil fuel dependency, what is it transitioning toward?

"A lot of time and energy goes into managing the old economy out of its current state," Gilbert says. "I saw the need for much louder, bigger conversations around how we're going to build the new economy that's going to replace it." In other words, to quickly transition away from an economy that relies on carbon-emitting fossil fuels, an array of clean-energy solutions will need to scale up quickly to lay the foundation for a new green economy.

Seeking out and investing in such solutions is exactly what Gilbert now does on the team at the independent investment firm Carbon Direct Capital, by scaling "negative emissions" and other carbon management tools and companies.

"We have all these corporations that have pledged net zero that now need to buy products to support those pledges," Gilbert explains. Such products include carbon capture and removal technologies for heavy industry, like carbon recycling through utilization, as well as green fuels like green hydrogen or sustainable aviation fuels.

Carbon Direct Capital makes growth equity investments in such technologies. Gilbert says that in deciding whether to take a stake in a given technology or company, Carbon Direct Capital begins by screening for investments that address 100 million tonne annual emissions challenges. From there, investment candidates are subject

to rigorous technical, scientific, commercial, and financial scrutiny.

"We think it's important to demonstrate investment success in this field, because of the amount of capital that needs to come into it," Gilbert says. "With this diligent approach, we believe we can mitigate risk while optimizing both return outcomes and climate outcomes."

She notes that estimates suggest the capital required to achieve net zero will reach between \$5 trillion to \$6 trillion annually, through 2050. Government grants and philanthropic funding will be important to get companies ready, but she says Carbon Direct Capital aims to play a part in establishing the traditional private investment flows that are also crucial.



AS SOON AS Wendy De Wolf started thinking seriously about her future career, she felt certain she wanted to devote herself to addressing the problem of climate change. But where could she make the greatest impact?

As an undergraduate at Yale, she majored in geology and geophysics, and gravitated toward renewable energy. In her sophomore year, she began an internship with Energy Management, Inc. (best known for the Cape Wind Project in the Nantucket Sound, which was never built). The internship became a job as a project developer at Energy Management, where De Wolf helped build up the firm's solar group, alongside her colleague Jamie Fordyce.

In 2016, she and Fordyce spun out Energy Management's solar group to co-found a new solar project development business, which they named East Light Partners. She started Columbia Business School that same year, clear on the work ahead.

"I think of myself as a climate-change developer," De Wolf says. "To me, this is such an incredibly tangible way to address climate change." De Wolf says she thinks about climate change mitigation work as falling along a spectrum. On one end, she says, are the policymakers writing sweeping federal laws; on the other end are "steel-in-the-ground" developers like East Light Partners, who are enacting small-scale, incremental change.

East Light Partners handles the first stages of solar project development, investing capital early in the lifecycle of a project to de-risk it, with an eye toward eventually selling the project to a larger infrastructure asset manager. This means East Light takes on the tasks of finding a site for a new renewable project, building a relationship with landowners, determining where to connect to the grid, and more, up to the point of construction, which the asset manager buyer typically hires a contractor to do.

"I've felt a real draw to this world because you're having a direct impact on climate change," De Wolf says. "At the same time, it's small; it's one project at a time. It's not grand policy, but you can see the change that you're making when the steel goes in the ground."

Of course, the work East Light is doing to site, develop, and finance renewable energy projects is intricately tied with renewable energy-related policymaking on the federal and local levels. East Light has trained its efforts on states with proven markets for clean energy, and policies in these states have been integral in establishing and supporting such markets.

For instance, New York state, where East Light does much of its work, has a goal of generating 70 percent of its electricity from renewable sources by 2030 — a significant leap from its roughly 30 percent share of renewables today.

As more states set similarly ambitious targets, demand for new solar projects is mushrooming, and this demand is only further intensified by solar energy's progressively falling prices. East Light is eager to step in to meet this demand.

"Sourcing these renewable projects is easier said than done," De Wolf says. "We're filling the pipeline for the demand that's forming as our economy and investor community become more focused on mitigating climate change."

Still, there are challenges. De Wolf acknowledges that negotiating the balance between traditional

business demands and climate demands can be difficult, even in her sector, where decarbonization is an explicit part of the service provided.

"There's always a push-pull in which choices we make," De Wolf says. She points to the example of a solar project that East Light Partners recently worked to get permitted in the Adirondack Park in New York state. De Wolf and East Light engaged in an ongoing discussion with the park's agency about how to balance the various – and at times, competing – needs and desires for the project: protecting the park's gorgeous views, minimizing disturbance to ecosystems and park resources, and managing to connect to the grid.

"The goal is to end up with the best project you can design," De Wolf says. "You're not going to please everyone, but the best possible project takes into account these issues, along with climate change goals — and obviously you still need to have a business, too."



RON GONEN IS invested in ushering out one aspect of business that he argues is no longer tenable: companies offloading their waste onto the public. After serving as the deputy commissioner of sanitation, recycling, and sustainability for the Bloomberg administration, Gonen founded Closed Loop Partners to invest in building the circular economy.

"There's a disequilibrium that exists today: Companies are able to make a lot of money manufacturing their products," Gonen says, "but then they push off the costs associated with those products' waste to the commons." After all, he explains, companies are not asked to pay for the landfills or sanitation systems that manage their used products; taxpayers are.

Proponents of a circular economy ask companies to account for the collective costs of the waste they produce. Doing so creates incentives for businesses to use processes and materials that are higher quality and less resource intensive, and to strive to reduce waste by designing products that can be repeatedly reused or upcycled.

Closed Loop Partners invests in the technologies, materials, and recycling infrastructure necessary to get there. With \$400 million in assets under management and investments in 60 portfolio companies across eight countries and 25 US states, Closed Loop Partners reports that its investments have already helped avoid 6.8 million tonnes of greenhouse gas emissions and kept 3.6 million tons of materials in circulation. The firm makes venture capital, growth equity, and private equity investments in companies around the world, and offers project-based finance to build up recycling and circular-economy infrastructure across North America. The Closed Loop Ventures Fund has taken stakes in Dimpora, a Switzerland-based company developing sustainable membranes for outdoor gear; HomeBiogas, an Israel-based company creating anaerobic digester units to convert organic waste into renewable energy and fertilizer; and Thrilling, a Los Angeles-based Internet marketplace that curates items from online boutique vintage clothing stores across the US, increasing access to reusable fashion.

Gonen says creating a true circular economy will require the scaling up of various types of businesses, new infrastructure and materials, and buy-in and support from other sectors of society.

"We need to create a system where companies that put products into the market are responsible for those products," Gonen says. "If we have that kind of system, companies will innovate around the materials they use, the recycling systems they fund, and processes to make sure their products eventually come back to them – because if not, it'll go to a landfill, which they should be financially responsible for."

Of course, he concedes, that's not yet the system that companies are operating within, and policy intervention will probably be necessary to get there. At the same time, he points out, some of the world's largest retailers and consumer goods companies have invested in Closed Loop Partners (including Microsoft, Nestle, PepsiCo, and Unilever), and many others are investing in circular

processes of their own, indicating a growing acceptance of the circular economy's core tenets.

"We still need to make the case for the circular economy," Gonen says, "but it's becoming more mainstream, and we're quickly getting to a place where the case no longer needs to be made. Things are changing fast, but we're not yet where we need to be."



IN THE YEARS after Mark Gallogly met his wife, Lise Strickler '86, at CBS in the late 1980s, the two would regularly abscond from New York City to hike the Adirondack Mountains. Strickler was already a devoted environmentalist, and she and Gallogly would talk about the impacts of acid rain on the landscape they loved — and, eventually, about the notable improvements in the place as it gradually responded to national policies, activism, and investments by coal plants that together conspired to reduce the harmful pollution.

"I saw this obvious deterioration of an environment that was stopped, and ultimately regenerated, through a series of decisions around public policy and around business," Gallogly says.

Now, he's found a way to align himself with the type of regenerative force — one that grows out of a collaboration between government, business, and environmental advocates — that he first noticed at work in the Adirondacks.

In 2015, Gallogly and Strickler founded Three Cairns Group, with a focus on the climate crisis through venture investing, philanthropic initiatives, and public policy advocacy. Gallogly now works with Three Cairns full time, after retiring in December 2020 from Centerbridge Partners, a \$28 billion private equity, real estate, and credit investing firm that he co-founded. Before Centerbridge, Gallogly worked with the Blackstone Group for 16 years, where he was head of global private equity.

He also served on President Obama's Council on Jobs and Competitiveness from 2010 to 2012 and on the President's Economic Recovery Advisory Board from 2008 to 2010.

At Three Cairns, Gallogly applies the expertise he's amassed during his 35-year investment management career. One arm of Three Cairns is venture-capital focused; the firm has stakes as a limited partner in several climate-related venture firms and is also a direct investor in companies addressing climate change through new technologies and services. In this part of its business, Three Cairns seeks a return on its mission-focused investments.

Separately, Three Cairns and its founders act as philanthropists seeking to ameliorate the climate crisis, without an eye on returns.

"We're trying to identify cracks in the ecosystem of finance around climate," Gallogly says, "and figure out how we can form partnerships to help fill those cracks and provide new services that don't currently exist."

One of these philanthropic efforts is a new fund focused on the Global South called Allied Climate Partners (ACP), which will seek to invest in project development in Africa, India, Southeast Asia, and the Caribbean. In many regions in the Southern Hemisphere, Gallogly explains, risk-oriented investment capital is often not available or accessible, which removes a key part of the necessary growth cycles of businesses and projects. "The idea," he explains, "is that ACP would be that risk-oriented party."

Another of Three Cairns' philanthropic initiatives (recently announced at COP27 in Egypt) is the Global Carbon Trust, a partnership with Bloomberg Philanthropies that is designed to strengthen the rigor of global carbon markets and reduce greenwashing. One of the Global Carbon Trust's missions is to structure term-limited contracts for carbon credits and introduce them into a carbon market where, currently, carbon credits are created on a permanent basis. Gallogly believes the introduction of term-limited credits represents a crucial step in the maturation of the global carbon market because it means, for one thing, that third parties like insurance companies can step in to insure the credits, eliminating buyers' risk and enabling the carbon

market to scale. What's more, term-limited carbon credits would mean that after the specified term, the owner of a carbon credit-generating forest, for example, can sell it again and is incentivized to employ the latest technology to increase the carbon storage capacity of that forest.

"The market needs a standardized, term-limited, well-documented contract and one that is monitored and verified over time," Gallogly says. "All of this creates alignment around a mission."



IN SEPTEMBER 2021, Donnel Baird testified before Congress during a hearing on the economic benefits of electrifying America's homes and buildings. During his testimony, Baird presented his own climate-tech company, BlocPower, as an illustration of the economic value waiting to be unlocked by making homes and buildings healthier, safer, and less environmentally impactful.

"The business case for BlocPower is simple," he said during the hearing. His company replaces antiquated fossil fuel energy systems in old buildings with all-electric technology, like heat pumps, thereby focusing on the third-highest source of carbon emissions in the United States: residential buildings. "BlocPower makes money because this technology saves so much in energy and other costs that with the right transaction and incentive structure, BlocPower is able to turn a profit and leave households spending less on energy than before," he explained.

Indeed, BlocPower has ably demonstrated its economic case in the near-decade since Baird founded the company while a student at CBS in 2014. BlocPower has raised over \$100 million in debt and equity financing from investors including Microsoft, Goldman Sachs, Apple, Andreessen Horowitz, and others. In a recent conversation on the Tamer Center's *Capital for Good* podcast, Baird said he believes that BlocPower's

strong commercial viability will be the engine that drives it to scale.

At the same time, Baird is eager to partner with governments and push for the right policies to achieve the extensive scale he envisions for BlocPower. In fact, he's come to believe that government and business must work together to address a crisis as massive as climate change — neither the public nor private sector can do it alone.

"I'm a Black American," he said in the *Capital* for Good interview. "We know that the power of the federal government to implement just policies is critical to the survival, empowerment, and wealth building of Black Americans."

Before attending CBS, Baird served as a political organizer and worked with President Obama's first campaign. He believes that governments have access to unique levers for change. At the same time, he added, so do businesses in the private sector.

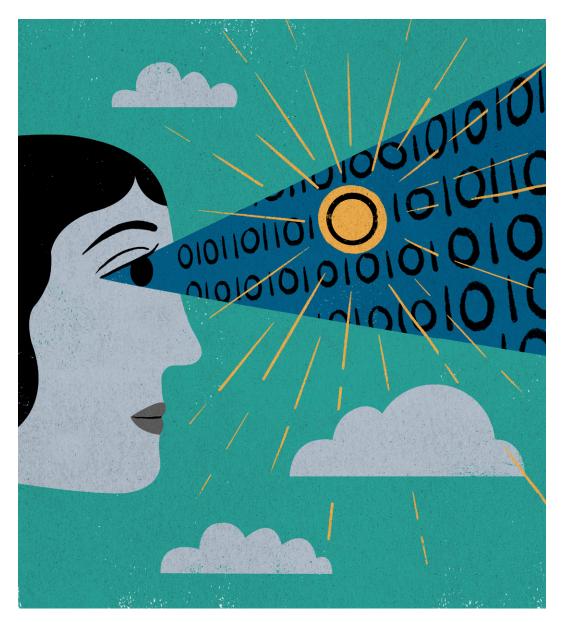
"It is necessary, when fighting the climate crisis, to have robust policy intervention, but it won't be sufficient," Baird said. "We have to have the private sector step up." He added that \$4.5 trillion will be required to pay for the labor and equipment necessary to decarbonize buildings across America.

Such a massive undertaking also creates new employment opportunities. In New York City, BlocPower has partnered with the city government to train and hire over 1,700 clean-energy workers from several low-income, high-crime neighborhoods to date.

In a step toward ramping up and approaching the massive scale of the problem, BlocPower is now working on decarbonizing buildings in whole cities at a time. The company is working with the government of Ithaca, New York, to decarbonize its 6,000 buildings and help the city reach its ambitious goal of 100 percent decarbonization by 2030. Baird said his company is now in talks with other cities inspired to follow Ithaca's lead.

"Our view is that if you can move a building completely off of fossil fuels, then you can do all of the buildings on a city block," Baird said. "And if you can decarbonize all of the buildings on one city block, then, theoretically, you can decarbonize all the buildings in a city."

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Climate Modeling Reaches for the Next Level of Precision

Through two-way knowledge flow, CBS Professor Vanessa Burbano ensures that businesses shape and benefit from climate modeling. he trends in historical data are clear: There is no doubt that global climate change impacts the planet and human life.

Yet, great uncertainty remains about the pace and scale of the current changes, as scientists struggle to wrangle the complex models and massive datasets needed to estimate environmental impact with precision.

That uncertainty plagues both policymakers and business managers, who must plan for consequences that are expected but inexact – and then motivate people to take action to prevent them. When the consequences can't be pinned down, uncertainty can become an

excuse to resist or delay the change necessary to protect our future.

Last fall, Columbia University became the epicenter of efforts to bring greater precision to climate modeling and encourage societies to prepare for the inevitable disruptions ahead. A \$25 million grant from the National Science Foundation established Learning the Earth with Artificial Intelligence and Physics (LEAP). Led by Columbia Engineering, Columbia's Faculty of Arts and Sciences, and the Lamont-Doherty Earth Observatory, this massive, multidisciplinary climate modeling center leverages big data and machine learning to improve climate projections.

But it's not enough to build better models; it's critical to share the knowledge and estimates they yield with businesses and other organizations so they can act on the data. And that information must be relevant, so it's key to maintain a dialogue with industry and other stakeholders to learn what they need to know.

A Business Partner

That's where Columbia Business School Professor Vanessa Burbano comes in. As corporate engagement director for LEAP, her role is to liaise with public and private partners to get a better understanding of what data they need and what pressing questions they'd like to have answered.

Bidirectional knowledge transfer is a primary goal of LEAP, says Burbano, the Sidney Taurel Associate Professor of Business at CBS.

"We recognize it's not just about creating more accurate climate estimates," she says. "If we don't create and disseminate estimates people will actually use, we won't have as much impact. So our goal is to understand what it is that private, public, and community partners are looking for in climate data and where they feel the current gaps are."

Burbano currently works with a list of partners that includes tech giants such as Google and Microsoft; research consortiums such as the Central Northeast Big Data Innovation Hub; consumer product companies such as PepsiCo; and public entities such as the New York City Department of Education, the Museum of Natural History, and the Trust for Governors Island.

Spreading the Word

The other half of LEAP's knowledge transfer mission is to push new knowledge out to public, corporate, and policy audiences that can create policies and build infrastructure to address hotter climates, rising seas, more extreme droughts, and other life-changing impacts. Currently, LEAP is developing a portal that will give stakeholders access to its climate data and analysis.

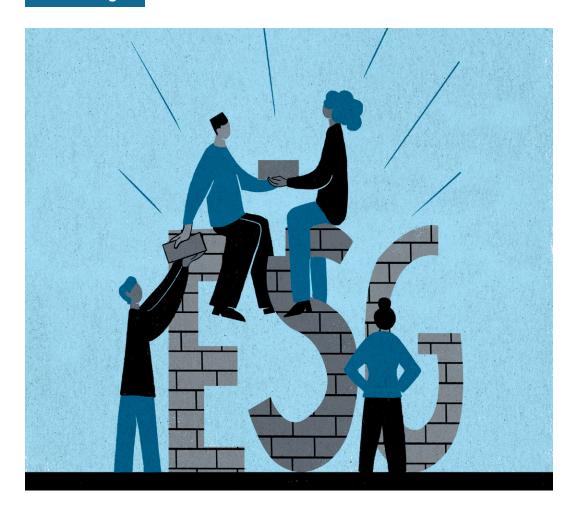
While her dissemination efforts are just beginning, Burbano is planning to leverage lists of hundreds of CBS alumni interested in climate change, as well as the audiences of many CBS entities engaged in climate research and mitigation. For example, LEAP will present at the Tamer Center for Social Enterprise's annual conference, "Climate Business & Investment," in April, which unites climate academics and business leaders in understanding how new advances in research and practice can inform investments in specific sectors of the global economy.

Globally, however, disseminating this valuable information will require some creativity.

LEAP's organizers are acutely aware that climate change will not affect all equally, and a core value of their work is a focus on justice, equity, diversity, and inclusion. As their advanced models produce more accurate estimates of climate change, LEAP will also innovate on new means of outreach to ensure that its findings are shared with the most vulnerable nations. To advance that effort, Andrew Revkin, founding director of the new Initiative on Communication and Sustainability at Columbia's Earth Institute, joined LEAP as its public engagement director.

Burbano was drawn to LEAP because her own research looks at the strategic implications of corporations behaving responsibly or irresponsibly when it comes to environmental, social, and governmental issues. Now, she is enjoying working with others across disciplines to build partnerships and disseminate data that will help encourage environmentally responsible behavior.

"It's a lot of fun, leveraging the various parts of Columbia that are getting involved with climate issues now," she says. "And there are a lot!"



The Good, the Bad, and the Ugly of ESG Investing

Professor Shivaram Rajgopal discusses the improvements that are called for, and why he thinks ESG is more than just a passing fad. By Katie Gilbert

hivaram Rajgopal considers himself an "ESG pragmatist."

The Roy Bernard Kester and T.W. Byrnes Professor of Accounting and Auditing at
Columbia Business School is on a mission to
bring an evidence-based examination to the
space, one that seeks to measure, report on, and
compare companies' environmental, social, and
governance (ESG) performance — at a time
when its pervasiveness is expanding rapidly.

In 2023, the Securities and Exchange Commission's new rules requiring climate-related disclosures from US public companies will probably take effect; in the European Union, a new Corporate Sustainability Reporting Directive will also go live. These new laws will mean that many corporate leaders who have so far opted out of ESG measurement and disclosure will have to ramp up their understanding of the space quickly.

A leading expert on assessments of companies' environmental and social impact, Rajgopal

would be the first to admit that a close look at today's ESG ecosystem can elude understanding. Reporting standards and key definitions are manifold and sometimes contradictory; claims by both ESG proponents and detractors have been exaggerated; and greenwashing has lurked among the honest attempts at ESG disclosure and improved sustainability practices.

ESG has charted a rapid and somewhat chaotic rise since it first emerged as a new acronym in a 2004 report from the United Nations Global Compact. From this very first report, the idea was that a consideration of ESG factors ought to be taken up by the various actors within global financial systems, who would put pressure on one another to deepen their shared commitment and ultimately build greener, more socially responsible economies. The report included ESG recommendations for companies, financial institutions, investors, financial analysts, regulators, stock exchanges, and others. Eighteen major financial institutions endorsed the report upon its publication.

It didn't take long for the ESG space to mushroom. Less than two decades after the UN report was published, total investment assets with an ESG filter are expected to surpass \$41 trillion by the end of 2022, constituting more than a third of the total global assets under management, according to Bloomberg Intelligence. This is nearly double the total from just eight years ago.

Companies have responded in various ways to the ESG craze — in part through new practices like issuing ESG reports and public pledges. One such pledge that made headlines in 2019 was Business Roundtable's Statement on the Purpose of a Corporation, which was signed by 181 CEOs, including the heads of Amazon, JPMorgan Chase, Johnson & Johnson, Vanguard, BP, and Exxon Mobil. The companies committed to, in part, "investing in our employees," "dealing fairly and ethically with our suppliers," "supporting the communities in which we work," and "[protecting] the environment by embracing sustainable practices across our businesses."

Rajgopal wondered about the true impact of such a statement. Together with Aneesh Raghunandan of the London School of Economics, he investigated whether these signatory companies "walk the talk" when it comes to stakeholder-friendly practices. The results were not flattering: They found that, compared with their industry counterparts, publicly listed signatories on the statement committed more environmental and labor-related violations and emitted more carbon.

Rajgopal has also trained his evidence-based investigating on the asset managers within the ESG ecosystem. Again working with Raghunandan, he found that ESG mutual funds claiming to prioritize socially responsible stocks actually held more companies displaying lower compliance with labor and environmental laws than non-ESG funds managed by the same institutions. Rajgopal's other research has suggested that carbon emissions disclosed by firms are probably not priced by equity markets and that negative screening (or avoiding stocks with poor ESG measures) probably doesn't impact the companies being avoided.

In the following interview, Rajgopal reflects on what his research is revealing about ESG, what improvements are called for in the space, and why he's still convinced — and even hopeful — that ESG is more than just a passing fad.

CBS: Do you believe that ESG as a specific lens on business and investing is here to stay?

Shivaram Rajgopal: I used to think this was a fad that would pass. But I'm now convinced otherwise.

For one thing, businesses tend to set the cost of natural capital at zero. By natural capital, I mean water, land, forest, minerals, oil. It might not literally be zero in their accounting, but it's so highly subsidized it might as well be economically zero. It's nowhere close to the price that extracting these things tends to cost society.

And second, we have the issue of externalities, which in the jargon simply means that in the process of doing something — say, smoking — you harm someone else — say, by putting secondhand smoke into the air. The classic way to resolve an externality is through some kind of tax, or policing by a regulator external to private parties. There has to be some kind of public

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CBS Panel at COP27 Tackles Financing the Transition to Net Zero

How can emerging climate solutions attract financing to scale? By Katie Gilbert

s the world's leading climate experts and advocates gathered in November for the United Nations Climate Change Conference COP27 in Sharm el-Sheikh, Egypt, the Columbia community convened experts on the financing of climate solutions.

Costis Maglaras, dean of Columbia Business School; Alex Halliday, founding dean of Columbia's Climate School; and CBS professors Gernot Wagner and Bruce Usher (alongside dozens of Columbia alumni working across climate and sustainability sectors) offered their expertise, spurred conversations, and learned more about the roles and responsibilities of businesses in fighting climate change.

CBS hosted a panel of practitioners and academics at the conference to discuss a complex and critical topic: financing the transition to net zero. Moderated by Vijay Vaitheeswaran, global energy and climate innovation editor at *The Economist*, the panel tackled the question of how emerging climate solutions can rapidly attract the financing they need to scale. Panelists also considered heartening developments in the space, as well as more-frustrating sticking points. Their conversation highlighted four key takeaways:

We're in execution mode now.'

When Vaitheeswaran asked panelist Kara Mangone '14, global head of climate strategy at Goldman Sachs, about her assessment of the climate investing landscape, she offered a hopeful one: "I think the headline answer to your question is that we're really in execution mode now," said Mangone. "That's the positive takeaway I would offer from this week in Sharm el-Sheikh."

She noted that at this year's COP and those previous, many businesses had made net zero pledges, following the lead of country commitments representing more than two-thirds of global GDP. That creates a demand for low-carbon solutions: "The work that's being done now is really rolling up our sleeves and funding and investing in the areas that we need to," she added.

This is precisely what panelist and CBS alumna Nili Gilbert '03 is working on as vice chairwoman at Carbon Direct, a carbon management company dedicated to making climate science actionable through two separate businesses: the first assists clients (mainly companies and municipalities) with their decarbonization goals,





Scenes from the CBS COP27 panel on financing the transition to net zero.

and the second invests to build up the industry of companies that can help them do so.

Gilbert explained how the Glasgow Financial Alliance for Net Zero, where she chairs the advisory panel of technical experts, has identified four key types of financing for the transition to net zero. The first might be thought of as the low-hanging fruit - investing in the assets that are already part of the net-zero world (like solar and wind). The second is investing to transition the assets that can be transitioned over time along a 1.5-degree pathway (in other words, the assets that have been pledged to net-zero and the ones remaining to do so). The third is appropriately managing out the assets that simply can't be part of a net-zero world, like coal. Finally, the fourth category is investing in climate solutions that eliminate, reduce, or remove GHG emissions, including zero carbon alternatives to high-emitting assets (for example, green hydrogen and carbon capture and storage).

"I looked at the problem set and realized that, if right now we have four parts of this portfolio today, then by 2050 it needs to come down to just two parts – because everything that can be transitioned will eventually be transitioned in a net zero world, and everything that needs to be phased out will be phased out," Gilbert said. "When you look at it this way, you realize just how big the already-net-zero and the climate-solutions areas will need to become. That's why I'm so passionate about Carbon Direct, where we work on investing in and bringing to commercial scale the climate solutions field."

The private sector has an important role to play in scaling climate innovations.

Mangone, in her role at Goldman Sachs, is also working on finding creative ways to solve the beguiling problem of how to scale up the climate tech that works (say, sustainable aviation fuels) but isn't yet at a price point that is spurring demand.

"If, as a public corporation today, you can't invest in those technologies, or if it's three times the cost to invest in those technologies compared to your traditional approach, that becomes a very difficult problem to solve," Mangone said.

One approach is to create economies of scale where possible. Mangone said Goldman Sachs has done this by, for example, matching Volkswagen, one of its clients, with Northvolt, a Norwegian supplier of sustainably produced battery cells.

"Being able to match VW with this emerging company that has great technology allowed them to effectively lock in a guaranteed purchase order of very high volume and help them lower the cost," Mangone explained. "I think this is one of the big unlocks: that you actually have the ability to leverage innovation and key players."



Bruce Usher, the Elizabeth B. Strickler '86 and Mark T. Gallogly '86 Faculty Director of the Tamer Center for Social Enterprise at Columbia Business School, noted that one of the most important lessons from his 20 years in sustainable finance is the indispensable role of policy support. He pointed to solar power: Two decades ago, all of the solar that had been built in the prior 40 years totaled less than 1 gigawatt. Last year, the world built over 100 gigawatts.

"The technology works," Usher said — but on its own, that wasn't enough to scale up as quickly as it did. "The lesson is you need a policy that drives down the cost of the product that's substituting for fossil fuels, to the point where the consumer is indifferent or prefers the substitute product."

The panelists agreed that the US's passage of the Inflation Reduction Act represented a major step forward for climate tech and financing. Still, Usher said, one necessary pillar of the transition to net zero is still missing: an effective carbon credits market.

"The reality is, despite a lot of concerns, disputes, and so on, we must have a functioning carbon credits market to get us to net zero," Usher said. "It's essentially impossible without that."

Almost no business on the planet can entirely reduce emissions to zero, he explained. The same will probably be true for human activity more generally. "So there has to be some area where you can offset," he said. "We have a lot of established technologies and emerging technologies that will allow us to do that. What we're missing is a mechanism to trade those offsets."

More needs to be done to ensure a just transition.

Vaitheeswaran wrapped up the conversation by asking panelists how they believe richer societies – and those most responsible for climate change – can work to ensure that the net-zero transition is conducted in a way that considers the needs of indigenous communities and developing areas that are most vulnerable to climate change. How will these groups benefit from the economic opportunities created by the green revolution? How will they be supported as climate change intensifies?

"One of the fundamental realities that the climate community needs to recognize," Gilbert said, "is that there can be no transition at all without a just transition."

She added that estimates of the remaining investments necessary to achieve net zero run from two-thirds to upwards of 75 percent of capital being invested outside of North America and Europe. "We need to maintain long-term political support around the world for the types of policies that we've just been talking about," she said. "We really need to understand the way that all of our goals work together as an interconnected system."

intervention. And if regulators are not effective at dealing with negative externalities, is there another type of collective body that can bring pressure? That could be customers or investors or somebody else with some influence on what companies do.

CBS: Let's set the stakes for why you're on this intellectual journey, as you've put it, to better understand ESG and its impacts. To whom are the answers to your questions about ESG most important?

Rajgopal: Assuming one buys at least some of what I just said, I would argue that the stakes are pretty high for anyone involved in the corporate process.

A lot of the pension funds and the institutions certainly want to know the answers to these questions about ESG, because they're the so-called universal owners, which means people who hold stocks for long periods of time.

And if you're sitting on a corporate board, don't you also want to know the answers to these questions? For some businesses — such as those in agriculture, water services, insurance, or tourism — you're already beginning to feel the financial impact of climate change on your revenues and costs. And think about the next generation: They believe that we've not done such a good job of taking care of common resources. Their consumption decisions, future voting decisions, etc., are perhaps going to be shaped by this worldview. So, as a business, you're probably better off, as the cliche goes, knowing where the puck is headed.

There's been a change in the zeitgeist; the social conversation has shifted. It's like a perfect storm of many, many things coming together to push companies to have a closer look at those two ideas: 1) Why are we assuming that the natural capital that's been given to us is basically free, and 2) will there be pressure to account for our negative externalities?

CBS: Your research has shown, however, that ESG rating, reporting, and investing as it exists today has some problems —

for example, businesses don't always live up to their pledges and the stated impacts of ESG investing don't always bear out in reality. Has this repeated finding surprised you?

Rajgopal: No, it's sadly become depressingly routine now. We end up finding, in setting after setting, that companies don't necessarily walk the talk. All the tall claims about how ESG is risk-reducing and cash-flow increasing don't really seem to hold water or show up robustly in the data, despite loud claims to the contrary by interested parties.

And conceptually, why would we expect such links between externalities and cash flows? If nobody is going to make Coca-Cola pay for the plastic water bottles that don't get recycled, for instance, why would it show up in their current or future cash flows? So maybe one way to read this work is that it's simply pointing to a failure of the political system to regulate externalities. And maybe regulation or a carbon tax is the only answer, but that's a conversation that, given our polarized world, nobody wants to have.

CBS: How can ESG improve? What recommendations do you have for those working within the space?

Rajgopal: I think it's basically time to have a cold shower and then just sit down and think a little more dispassionately about claims on both sides of the ESG debate; that's one recommendation. Both sides have overstated their cases massively.

In terms of investors, I think the whole ecosystem of standard setting, reporting, and measurement has become a runaway train and out of control. There's a whole alphabet soup of NGOs in this space trying to set standards. It's a cacophony in that world. And the rating agencies do not necessarily tell us what their process really is for arriving at their ratings. The whole ecosystem needs reform.

If you're on a corporate board or leading a company, it's pretty much inevitable that you have to have a conversation about ESG. So, I would say do it with authenticity and rigor and don't overclaim. People are smart. They'll figure it out if all you're doing is some kind of greenwashing.

And it's quite likely that there are at least branding-based benefits to being seen as a sustainable company, one that actually walks the talk. Your sales on average may be slightly higher. You're more likely to attract and retain smart talent.

One more thing for the board: consider declaring who your top two stakeholders are. That kind of focus makes everyone's life easier. We usually do not ask CEOs to manage two or three key issues in their non-ESG work. Why not extend that logic to ESG? And, rating agencies and others will have an easier time rating your performance related to the two stakeholders you identified. In fact, the stakeholders you leave out may also say a lot about you as a company.

So, the selection has to be done carefully, but adding such focus may be a worthwhile exercise.

If you're someone who wants to join a company to work on sustainability and ESG, you can probably get a sense of a company's values by asking simple questions, such as, "Who does the chief sustainability officer report to?" If the person reports to PR or investor relations, I get a bit nervous — because the tendency is always to spin. If, on the other hand, they report to the CFO or maybe even to the CEO, that's excellent news, because this tells me that sustainability is part of the company's DNA in terms of strategic focus.

Today's Climate Leaders continued from page 41



BETH FORD, CEO of \$16 billion agribusiness and food company Land O'Lakes, considers climate change to be among the top challenges facing US farmers today – during what is, she believes, an unprecedentedly tested time for the industry.

Environmental sustainability and responding to the climate crisis have been among Ford's top priorities since she took the helm as CEO of Land O'Lakes in 2018.

In 2020, her company — which has been in operation for over a century and is structured as a farmer- and retailer-owned cooperative — formed the Land O'Lakes Sustainability Council. In 2021, this council formalized 14 companywide ESG goals in alignment with the UN Sustainable Development goals. They include achieving net zero emissions by 2050 (across scope 1, 2, and 3 emissions); producing 100 percent reusable, recyclable, or compostable consumer packaging by 2030; and using 100 percent renewable energy in operations by 2030.

Since assuming Land O'Lakes' top leadership

position, Ford has made the case that actively improving its relationship with the environment is a mandate that's in the company's DNA.

"We see farmers as the original environmentalists," Ford says, "who truly understand what it means to leave the land better for the next generation."

Much of the company's expanding effort to put agriculture in the driver's seat when it comes to climate solutions is happening through Truterra, one of Land O'Lakes' four core businesses. Launched in 2016, Truterra works to encourage and enable farmers to adopt and maintain sustainability strategies for their farm businesses that maximize yields and expand stewardship.

In September, Truterra was one of 70 projects selected as grant recipients by the USDA's Partnerships for Climate-Smart Commodities. Its project, titled Climate SMART (Scaling Mechanisms for Agriculture's Regenerative Transformation), will receive up to \$90 million in grant funding. The project's goal is to reduce greenhouse gas emissions by 7.2 million metric tons of carbon over five years, roughly equivalent to removing 1.5 million cars from the road for a year.

"Under this project, Truterra will continue to do the great work they've been doing but at a faster and broader pace, all with the goal to scale, connect, and reduce barriers for farmers wanting to transition to regenerative agriculture practices," Ford explains.

The Future of Executive Education: Leading on Climate, Finance

ith a global push underway to cut greenhouse gas emissions to as close to zero as possible, business leaders are discovering that embrac-

ing net zero is not only good for the environment, but also good for business.

To help them on their journey, Columbia Business School's Executive Education Division recently launched its new Business and Climate: The Journey to Net Zero program, which offers an in-depth look at current climate change policy, green finance, and how to establish strategies to help drive an organization toward a net zero future.

The School's Executive Education division offers in-person and virtual short-term non-degree programs for professionals working in managerial and executive roles, as well as custom programs for various organizations looking to train larger numbers of employees.

We recently checked in with Pierre Yared, the MUTB Professor of International Business, senior vice dean for faculty affairs and vice dean for executive education at Columbia Business School, who shared his thoughts on the Executive Education department's priorities and goals for the coming year.

CBS: Tell us about the surge in demand you've seen over the past few months.

Pierre Yared: This is happening for a few reasons. First, many companies are facing pressure in terms of hiring or retaining employees so they are providing learning and development opportunities as an indirect way to compensate them. Companies are also interested in ensuring that employees who are promoted internally have the skills to do their new and bigger job.

A second reason for the significant growth in demand is that we have moved into an incredible new facility here in New York, and that creates an opportunity for individuals and corporations to come and visit us and to experience our programs.

CBS: What are your new programs?

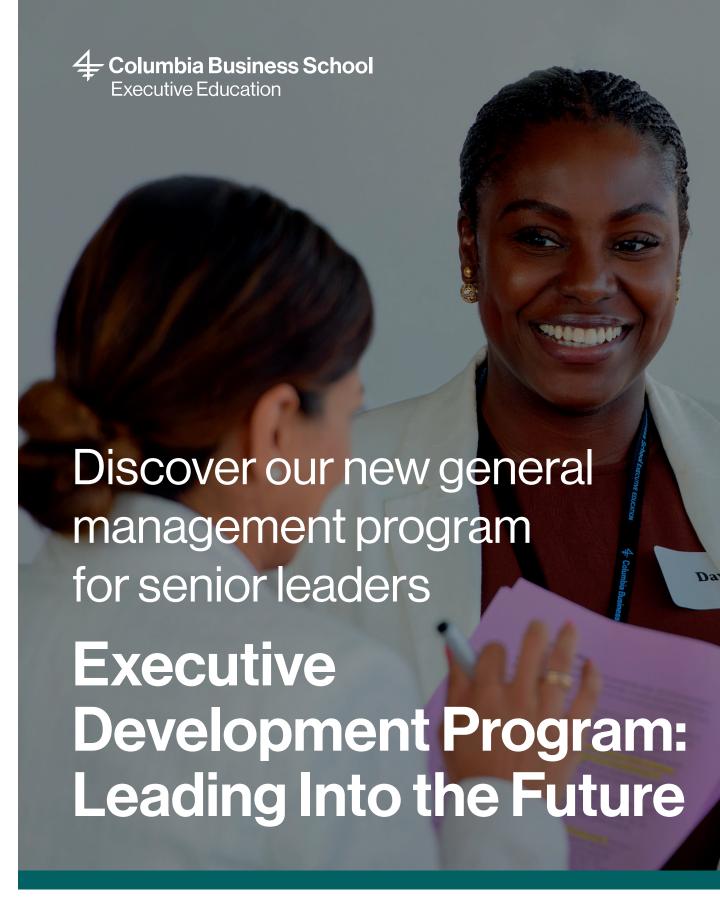
Yared: There are several new programs that have come over the past few months. We have a very successful long-form hybrid program for current or future chief financial officers that involves some online elements and has portions that are in person here at our new Manhattan-ville campus. And we have another that's focused on venture capital and private equity that has been extremely successful and really speaks to the School's strength in finance — not just because of our faculty and our alumni, but also because of our location and ties to the New York City finance community.

CBS: What's in the works?

Yared: We have one program on the future of finance that's focused on topics such as blockchain, crypto, and fintech, and how those new technologies and digital transformation overall are changing the world of finance. And there's another on business analytics that looks at the data-driven techniques that are transforming modern businesses and organizations.

Our revamped Executive Development Program, which is our general management program for senior leaders, focuses on formulating business strategies in a rapidly changing world.

Every single one of our programs has both a content element where we showcase Columbia Business School's cutting-edge research and thought leadership, as well as an important leadership component where we help managers figure out how to appropriately build strategies and how to effectively lead their teams in achieving that strategy.



Learn more: go-execed.gsb.columbia.edu/edp

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