Climate Finance: Climate risks and opportunities for leaders in business and society (FINC-GB 2347-10)

Meeting Times: Room KMC 5-140, Tuesdays 6pm-9pm

TA: Xuran Zeng (xz4183@nyu.edu); Office hours by Appointment

Professor Office Hours: Tuesday, 5pm – 6pm, by Appointment (johannes.stroebel@nyu.edu)

Course Description:

Climate change presents one of the central challenges of our generation, with a wide range of effects on financial markets and the broader economy. At the same time, financial markets play an important role in financing the transition to a net-zero economy. In this class, we study the interaction between climate change and firms, financial markets, energy markets, regulators, and policy makers.

Given that climate change and sustainability issues more generally are affecting nearly every aspect of the corporate, regulatory, and non-profit worlds, the class will be valuable for students with a wide range of backgrounds and career goals, whether they are directly interested in climate and sustainability issues or primarily want to gain a better understanding of how these issues influence more traditional roles in the corporate and financial sector.

The class is very applied in its outlook, but we will frame the analysis through the lens of economic frameworks that help students think through the interactions between climate change and the broader economy in a systematic way. The objective is that the broad selection of topics and guest speakers will provide a variety of complementary perspectives on how climate change will shape economics and finance over the coming decades.

Class Topics

More specifically, in this class, we will:

i. Review the science behind climate change.
ii. Discuss the effects of climate risks (both physical and transition risks) on prices across various asset classes, including equities, fixed income, real estate, and mortgage-based assets.
iii. Explore the risks and opportunities from climate change for firms and financial institutions, including firms in the energy sector (both hydrocarbon and renewables);
iv. Understand how financial markets can help transfer and hedge climate risks as well as finance the transition to a net-zero economy.
v. Analyze the causes and effects of the growth of (and recent backlash to) sustainable/ESG investing.
vi. Explore the economic and financial foundations of various climate regulations, including emissions trading schemes and carbon taxes.
vii. Discuss approaches of constructing the Social Cost of Carbon, including an understanding of the appropriate discount rates.
viii. Understand the design and effects of a variety of regulatory efforts such as stress tests for banks by policy makers in the US, Europe, and beyond.
ix. Discuss how climate change affect energy markets and the price of electricity in the short-run and long-run
x. Analyze how climate risk interacts with other risks, such as the risk of future pandemics and geopolitical risks.
xi. Discuss how sustainable infrastructure investments as well as climate adaptation investments are important to combat and deal with climate change, in particular in urban settings.
xii. Explore risks associated with biodiversity and nature loss as an emerging driver of investment risk.

Professor Johannes Stroebel

Johannes Stroebel is the David S. Loeb Professor of Finance at the New York University Stern School of Business. He conducts research in climate finance, household finance, social network analysis, macroeconomics, and real estate economics. He is the Director of the NYU Stern Climate Finance Initiative.

Professor Stroebel was awarded the 2023 Fischer Black Prize by the American Finance Association, given every two years to the top financial economist under the age of 40. He has won numerous other awards, including the AQR Asset Management Institute Young Researcher Prize and the Brattle Award for the best paper published in the Journal of Finance. He has also earned an Andrew Carnegie Fellowship and an Alfred P. Sloan Research Fellowship in Economics. In the past, he was an Associate Editor at the Journal of Political Economy, the Review of Economic Studies, the Journal of Finance, and Econometrica.

Professor Stroebel teaches classes on climate finance at the undergraduate, MBA, and executive education levels. He regularly provides advice to governments and firms on managing their financial risks from climate change. Among other roles, he was a member of the Climate-Related Market Risk Subcommittee at the Commodities and Futures Trading Commission (CFTC), as well as a member of a Working Group on Extreme Weather and Financial Risks at the President's Council of Advisors on Science and Technology (PCAST). He is the Chair of the Academic Advisory Council of the Center on Regulation and Markets at the Brookings Institution.

Professor Stroebel read Philosophy, Politics, and Economics at Merton College, Oxford, where he won the Hicks and Webb Medley Prize for the best performance in Economics. In 2012, he earned a Ph.D. in Economics at Stanford University, where he held the Bradley and Kohlhagen Fellowships at the Stanford Institute for Economic Policy Research. Before joining NYU Stern in 2013, Professor Stroebel was the Neubauer Family Assistant Professor of Economics at the University of Chicago Booth School of Business.

MATERIALS

Since this is a very fast-moving area that is not traditionally taught in business schools, there is no required textbook for this course. Instead, I will be posting required and optional readings ahead of every class on NYU Brightspace. These will include newspaper articles, academic research papers and reports by industry groups, policy makers, and regulators.

EVALUATION

The class will have a midterm and final exam, which can cover all material discussed in class, including from the guest lectures. There will one graded final project. A participation grade will also be awarded, with strong weight on active participation during the guest speaker visits (see below). The weighting of the components of the grade is:

Midterm Exam	30%
Final Exam	40%
Final Project	20%
Participation	10%

While the class will generally be recorded, the expectation is that students will attend the in-person sections.

GUEST SPEAKERS

This class will feature a variety of guest speakers who will provide their insights. The bios of confirmed guest speakers are listed below. Speakers may come either in the first or the last part of the class.

To maximize the usefulness of guest speaker visits, I want every student to think of two questions for each speaker ahead of the visit. Please submit your questions at https://forms.gle/idapK5MKsZEGQpVj8

Please be prepared to ask the speaker during the visit. Submitting questions ahead of the speaker visit counts towards your participation score (in addition to active participation during the actual visit and other class sessions).

FINAL PROJECT

Each student is asked to turn in an individual final project. The final project should not exceed 2 pages of text in total (Times New Roman, Minimum Font 11). Given the space constraints, focus on communicating your views in an efficient way!

In a 2-page memo (total), please summarize and discuss one insight each from two of our guest speakers that you found particularly interesting. Discuss what aspects of the insight you agree which, and mention any areas of disagreement. You can pick any two of the guest speakers.

The final project is due by midnight on Wednesday, December 3, but you should feel free to submit it earlier. Please email the project to Xuran Zeng (xz4183@nyu.edu).

Date	**Class**	**Topic**
Tuesday, Sept 16	Class 1	Intro / Science / Climate Risk Overview
Tuesday, Sept 23	Class 2	Sources and Measurement of Physical and Transition Risks
Tuesday, Sept 30	Class 3	Climate Risk Management, ESG Investing
Tuesday, Oct 7	Class 4	Visit by **Linde-Eling Lee (MSCI)** Real Estate and Mortgage Markets I
Tuesday, Oct 14	Class 5	Real Estate and Mortgage Markets II Climate risk and the energy sector
Tuesday, Oct 21	Class 6	Midterm Exam **Visit by Zeev Krieger (Turtle Hill Capital)**
Tuesday, Oct 28	Class 7	Cost Benefit Analysis, Discounting Review, Risk as Covariance, Very long-run discount rates, Social Cost of Carbon
Tuesday, Nov 4	No Class (Go and vote!)	
Tuesday, Nov 11	Class 8	Financial innovation: Financing tools (e.g., Green bonds, Debt for Nature Swaps), Voluntary Carbon Markets **Visit by Emily Weng (BlackRock)**
Tuesday, Nov 18	Class 9	Regulating: Prices vs. Quantities; Emission Trading Schemes, Climate Risks and other risks (Pandemic / Migration / Geopol);
Tuesday, Nov 25	Class 10	Climate Risk and the Financial System Visit by **Pascal Weel (ING)**
Tuesday, Dec 2	Class 11	Biodiversity Risk Visit by **Matthias Pitkowitz (EQX Biome)**
Tuesday, Dec 9	Class 12	**FINAL EXAM**

Linda Eling-Lee

Founding Director and Head of the MSCI Sustainability Institute

Linda-Eling Lee is the Institute’s founding director and a leader in the field of sustainable finance. She most recently led global ESG and climate research at MSCI, where she built one of the world’s top teams of analysts dedicated to understanding long-term drivers of sustainable value.

Linda has authored multiple research papers on sustainable investing and twice been named by Barron’s to its annual list of the Top 100 Women in Finance. She serves as a director of US SIF: Sustainable Investment Forum and is a Fellow of the Finance Leaders Fellowship of the Aspen Global Leadership Network. Linda joined MSCI in 2010 following the acquisition of RiskMetrics, where she led ESG ratings research and headed consumer sector analysis. She received her doctorate in organizational behavior from Harvard University, holds a master’s from the University of Oxford, and has a bachelor’s in East Asian Studies from Harvard College

Zeev Krieger

Co-Founder & CEO, Turtle Hill Capital

Zeev brings over 18 years of experience investing and building businesses across sustainable infrastructure, cities, and communities. Presently, Zeev is a CEO and co-founder of Turtle Hill Capital, a specialty credit firm focused on climate and energy transition - part of Montauk Climate. Just prior to founding Turtle Hill, Zeev was a founding partner at Third Sphere Credit Fund, an $80mm specialized fund focused on inaugural credit facilities for leading climate tech growth firms.

Zeev began his career at Goldman Sachs where he specialized in impact investment with family office and foundation clients, before serving as head of investment for the Will Smith’s Family Office.

Zeev is an inaugural member of Climate Vine, was a longtime member of Urban Land Institute and has been recognized for his leadership at the intersection of credit and climate innovation. He holds an MBA from NYU Stern, a BA from the University of Pennsylvania.

Emily Weng
Director, BlackRock

Emily Weng is a member of the Fundamental Fixed Income team at BlackRock, focused on sustainable research and engagement. Emily is a portfolio manager on the platform's sustainable and transition funds, with a focus on impact funds. Emily also works with Fundamental Fixed Income teams to provide sustainable and transition solutions to our clients by integrating sustainability and climate risk integration tools to the investment process. She conducts and provides analysis on green, social, sustainability bond issuances throughout the entire investment lifecycle.

She earned a B.S. degree from Barnard College, Columbia University in 2016 with a double major in Economics & Mathematics, and French Studies. She earned her Master's of Science Degree in Sustainability Management from Columbia University in 2024.

Pascal Weel
Director at ING Americas

Pascal Weel is a Director at ING Americas, where he leads efforts on climate risk alongside key banking risks like liquidity, funding, and interest rate risk. Prior to ING, he played a pivotal role in shaping climate risk frameworks at the Federal Reserve and the European Central Bank, and supervised major global banks. Pascal has contributed to influential publications for the Network for Greening the Financial System, the Financial Stability Board, and the Basel Committee on Banking Supervision.

In academia, he serves as a Visiting Research Professor at NYU Stern's Volatility and Risk Institute and has taught Climate Economics at NYU Wagner. He holds a Master's in International Financial Economics from the University of Amsterdam.

Matthias Pitkowitz
Founder & CEO, EQX Biome

Matthias is Founder & CEO of EQX Biome, the world's first biodiversity fintech -- focused on mobilizing financial markets and technology to protect the world's remaining biodiversity hotspots, worth some $150 trillion per year but apparently on their way off the map.

Prior to EQX, Matthias was a sixth year corporate lawyer at Cravath, Swaine & Moore LLP, consistently ranked as the top US law firm for M&A and capital markets matters.

Matthias has executed more than $72bn worth of M&A and capital markets transactions for clients including Dell, IBM, Ferrari, Mylan, INEOS, Johnson & Johnson, American Express, J.P. Morgan, Goldman Sachs, Morgan Stanley, Credit Suisse, among others.

He is a respected author and speaker on long-termism, sustainability and capital markets, and has addressed audiences at the Aspen Institute, FCLT's Conference on Long-Termism; Columbia University, Fordham Business School, and others. He holds a Master of Laws from Columbia Law School, a PhD in corporate law from the University of Vienna, and a JD degree from the University of Vienna, each with Honors.