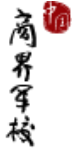




**PHBS**  
北京大学汇丰商学院



# ESG Finance Module 4, 2023

## Course Information

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### Classes Information

Lectures: Tuesday and Friday at 3:30 pm

Venue: PHBS Building, Room TBA

### Course Website:

All materials on the Course Management System.

## 1. Course Description

### 1.1 Context

Course overview: The Climate and ESG Finance course is designed to expose students to cutting-edge knowledge on climate issues and ESG finance. The corporate sector is by far the largest source of greenhouse gas (GHG) emissions (CDP, 2017). Corporate climate action has emerged as a key topic in the growing investor focus on environmental, social, and governance (ESG) goals, putting companies under increasing pressure as valuations, shareholder votes, and ESG ratings shift. When making investment and operational decisions, institutional investors and corporate executives are increasingly considering climate risk and opportunities. Facing this worldwide trend, PHBS master students must keep up with the rest of the world in terms of understanding climate finance and its applications in Chinese financial markets.

I will start the journey of climate finance in this class, beginning with what ESG is. Environmental, social, and governance (ESG) investing is a set of standards for a company's behavior that socially conscious investors use to screen potential investments. The environmental dimension has become more prominent in the last five years, with climate change and global warming being the most critical concern.

Prerequisites: The previous two classes (1) Corporate Finance and (2) Investments are strongly recommended. Some knowledge about statistics is also good for understanding the class.

### 1.2 Textbooks and Reading Materials

(1) Markandya, Anil, Ibon Galarraga, and Dirk Rübbelke, eds. Climate finance: theory and practice.

Vol. 2. World Scientific, 2017.

(2) Stefano Giglio, Bryan Kelly, and Johannes Stroebe, Annual Review of Financial Economics: Climate Finance, 2021,

(3) Global Warming of 1.5 °C, 2022, IPCC Annual Reports

## **2. Learning Outcomes**

### **2.1 Intended Learning Outcomes**

### **2.2 Course specific objectives**

#### ***(Warning: This is a temporary plan!)***

The **first section** of the class discusses the definition and history of climate finance, as well as its relationship to the three pillars of the ESG criteria. This section will also cover international climate negotiations and climate policies, as well as some basic climate science knowledge, such as which natural disasters are attributable to global warming. (4 hours)

Suggested readings:

(1) Markandya, Anil, Ibon Galarraga, and Dirk Rübberke, eds. Climate finance: theory and practice. Vol. 2. World Scientific, 2017.

(2) Stefano Giglio, Bryan Kelly, and Johannes Stroebe, Annual Review of Financial Economics: Climate Finance, 2021,

(3) Global Warming of 1.5 °C, 2022, IPCC Annual Reports

The **second chapter** discusses how to quantify corporate climate action and environmental performance, as well as its limitations and caveats. First, I will explain popular ESG rating agencies, their rating methodologies, and major limitations. Then I present alternative measures such as green human capital, green revenues, and climate-related patents. (4 hours)

Suggested readings:

(1) Berg, Florian, Julian F. Kolbel, Anna Pavlova, and Roberto Rigobon, 2021, ESG Confusion and Stock Returns: Tackling the Problem of Noise.

(2) Hege, U., Pouget, S. and Zhang, Y., 2022. The impact of corporate Climate action on financial markets: Evidence from climate-related patents

The **third chapter** looks at corporate climate performance, climate risk, and its interaction with stock returns and prices. To understand the impact on global stock markets, we focus on two arguments: climate preference and climate risk. I will also introduce the Media Coverage of Climate Change. (4 hours)

Suggested readings:

(1) Pastor, Lubos, Robert F. Stambaugh, and Lucian A. Taylor, 2021, Dissecting Green Returns, Technical report, National Bureau of Economic Research.

(2) Ardia, David, Keven Bluteau, Kris Boudt, and Koen Inghelbrecht, 2020, Climate Change Concerns and the Performance of Green versus Brown Stocks, National Bank of Belgium.

The **4<sup>th</sup> chapter** introduces the green bonds. A green bond is a type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects. I will introduce both government green bonds and corporate green bonds, as well as their roles in financing climate change mitigation actions. (2 hours)

Suggested Readings:

- (1) Corporate Green Bonds, Carloine Flammer, 2021, Journal of Financial Economics.
- (2) Pastor, Lubos, Robert F. Stambaugh, and Lucian A. Taylor, 2021, Dissecting Green Returns, Technical report, National Bureau of Economic Research.

Climate change mitigation technologies are discussed in **the fifth chapter**. First, I will discuss the new CPC Y02 scheme, which was co-created by the USPTO and EPO to aid in the identification of any technologies for climate change mitigation. Then, we'll look into how the financial market reacts to climate patent granting, as well as the economic implications. Another critical point is the real impact of climate patents on CO2e reductions. I will leverage my own studies as well as policy reports to teach students. (6 hours)

- (1) OECD, 2015, Measuring Environmental Innovation Using Patent Data
- (2) Hege, U., Pouget, S. and Zhang, Y., 2022. The impact of corporate Climate action on financial markets: Evidence from climate-related patents
- (3) Cohen, Lauren, Umit G. Gurun, and Quoc H. Nguyen, 2021, The ESG-Innovation Disconnect: Evidence From Green Patenting, Technical report, National Bureau of Economic Research.

In the **sixth section**, we discuss how institutional investors contribute to climate change mitigations. Institutional investors employ six different ESG strategies: (1) Negative/exclusionary screening; (2) Positive/best-in-class screening; (3) Integration; (4) Engagement, etc. Through large-scale surveys, we understand which kind of institutions care more about climate change. Moreover, we introduce the PRI and CDP Carbon 100+ project and their signatories for institutions. (6 hours)

Suggested Readings:

- (1) Gibson, Rajna, Simon Glossner, Philipp Krueger, Pedro Matos, and Tom Steffen, 2020, Responsible Institutional Investing around the World, Swiss Finance Institute Research Paper.
- (2) Gibson Brandon, Rajna, Philipp Krueger, and Shema F. Mitali, 2020, The Sustainability Footprint of Institutional Investors: ESG Driven Price Pressure and Performance, Swiss Finance Institute Research Paper.
- (3) Krueger, Philipp, Zacharias Sautner, and Laura T Starks, 2020, The importance of climate risks for institutional investors, The Review of Financial Studies 33, 1067–1111.

In the **seventh section**, we talk about how VC-backed startups and the VC industry contribute to climate change mitigation and the development of clean tech. We raise an important question about innovation to net zero: Can venture capital and startups play a meaningful role? (3 hours)

Suggested Readings:

- (1) Innovating to Net Zero: Can Venture Capital and Startups Play a Meaningful Role?, 2022, Silvia Dalla Fontana and Ramana Nanda

In the 8th section, we talk about the application of climate finance in Chinese financial markets. (3 hours)

### **2.3 Assessment/Grading Details**

The grading policy will be introduced in the first day of the class.

### **2.4 Academic Honesty and Plagiarism**

It is important for a student's effort and credit to be recognized through class assessment. Credits earned for a student work due to efforts done by others are clearly unfair. Deliberate dishonesty is considered academic misconducts, which include plagiarism; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.

All assessments are subject to academic misconduct check. Misconduct check may include reproducing the assessment, providing a copy to another member of faculty, and/or communicate a copy of this assignment to the PHBS Discipline Committee. A suspected plagiarized document/assignment submitted to a plagiarism checking service may be kept in its database for future reference purpose.

Where violation is suspected, penalties will be implemented. The penalties for academic misconduct may include: deduction of honour points, a mark of zero on the assessment, a fail grade for the whole course, and reference of the matter to the Peking University Registrar.

For more information of plagiarism, please refer to *PHBS Student Handbook*.