

## What do we know about climate finance?

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*What is climate finance? There are two main definitions: one emphasizes the link between climate and macro-economic risks and asset prices, while the other emphasizes the financing of public and private investment toward mitigation of and adaptation to climate change. As research in climate finance has increased exponentially over the last few years, it might be time for a more precise definition.*

*In this digest, **Matteo Gasparini (Oxford University)** creates a map of the main branches of this literature and classifies it according to different dimensions that could shed light on the emerging strands. He also identifies seminal articles.*

**Matteo Gasparini and Peter Tufano** (2023), in “[The Evolving Academic Field of Climate Finance](#),” analyze and classify a sample of more than 500 related academic articles from 2010 onwards. Growth in the field has been exponential: While prior to 2018, fewer than 20 papers were produced annually, by 2021 this figure had grown eight-fold to more than 160 papers (see Figure 1).

While Europe-based authors almost had a monopoly on climate finance prior to 2018, the field has internationalized since. Cross-regional cooperation, however, is scarce: fewer than 10% of papers with a Europe- or US-based first author have a second author in a different region.

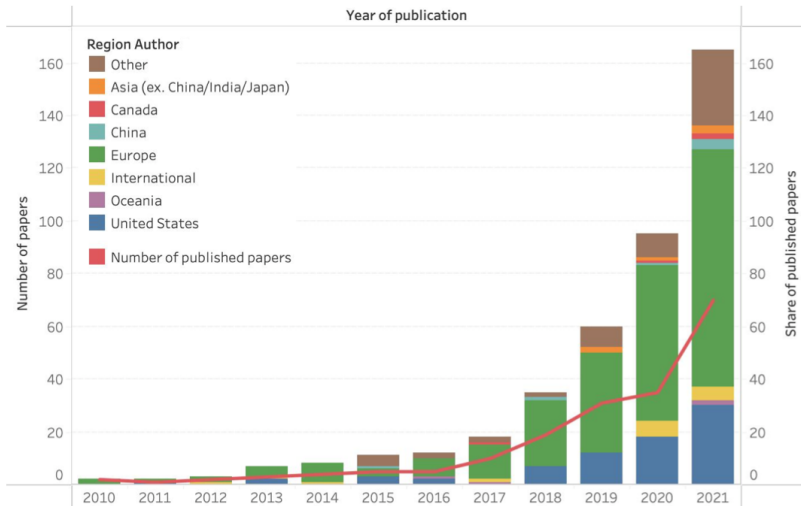
Predominantly young researchers are attracted by the field of study, with more than 70% of papers in the sample from academics below the level of Full Professor, including 9% from PhD students and 35% from early-career researchers.

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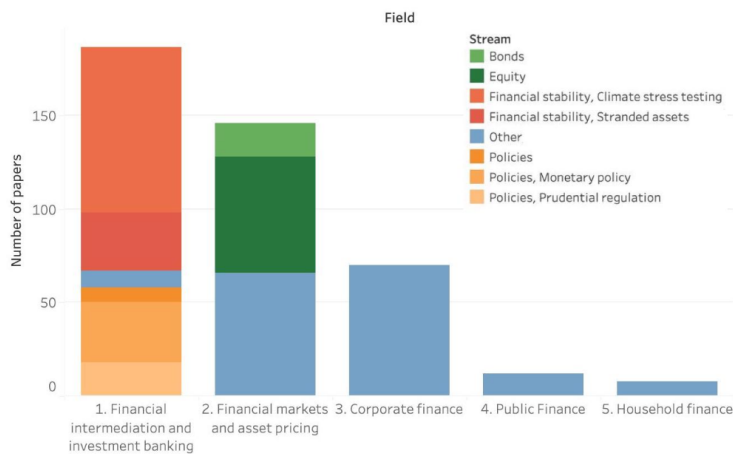
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**Figure 1: The bars represent the number of published and unpublished papers by year and by region of first author. The red line represents the number of published papers as of mid-2022.**

Based on paper-by-paper coding, the authors identify five clusters (see Figure 2 below). Authors at European institutions are more likely to work on topics in “financial intermediation,” including on green policies and assessments of financial stability, while American authors dominate work on “financial markets and asset pricing.” Climate change plays an increasingly important role in the “corporate finance” literature. Fewer climate-related contributions have focused on “public finance” and “household finance.”



**Figure 2: The figure shows the share of the climate finance literature interest in different issues broken down from an institutional perspective. All published and unpublished paper from 2010 to 2022.**

*The literature on climate finance is expanding quantitatively and qualitatively. Each research subfield is in the process of developing a new set of methods and terminology. Below we highlight the important papers in each of these subfields.*

### **Financial intermediation – Assessing stability**

**Hyeyoon Jung et al.** (2021), in [“CRISK: Measuring the Climate Risk Exposure of the Financial System,”](#) develop a climate stress testing methodology to assess the resilience of the financial system. They estimate the exposure of financial institutions to a stranded asset portfolio and calculate an expected capital shortfall conditional to an NGFS scenario. They find that some banks are particularly exposed to these risks and argue that climate change might be a systemic risk for the financial system.

### **Financial intermediation – Developing policies**

**Martin Oehmke and Marcus Opp** (2022), in [“Green Capital Requirements,”](#) employ a model of bank capital regulation to analyze the effect of differentiated capital requirements (for green and dirty loans) on financial stability and the green transition. They find that the tool might be effective in preserving the stability of the financial system, but they have little ability to foster green investments.

### **Financial markets and asset pricing**

**Patrick Bolton and Marcin Kacperczyk** (2021), in [“Do investors care about carbon risk?”](#) investigate whether financial markets price climate-related risks by looking at the cross-section of firms’ stock returns and carbon emissions. They find a statistically significant carbon premium related to absolute carbon emissions. They also find a relationship with the year-on-year change in emissions, but not with emission intensity.

### **Corporate finance**

**Zacharias Sautner et al.** (2023), in [“Firm-Level Climate Change Exposure,”](#) use machine learning methods and earnings call transcripts to analyze the increasing attention to climate change by corporate management and investors. The share of climate-related discussion in corporate reporting is used as a proxy for a firm’s climate risk exposure. The authors find that the utility sector is the most exposed, followed by construction and transportation equipment. The authors argue that their measure predicts real outcomes such as green patenting and green tech growth.

### **Household finance**

**Anders Anderson and David Robinson** (2021), in [“Financial Literacy in the Age of Green Investment,”](#) investigate whether households’ financial and climate literacy affects their investment choices. Surveying households’ environmental values and pension plan decisions in Sweden, they cannot find evidence that envi-

Environmentally minded people are more likely to hold green stocks. Financial literacy on the other hand seems to be associated with holding more ESG-labelled funds. The authors argue that complexity in identifying a truly green investment prevents people from investing in such assets.



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