Summary Report: Workshop on Physical Climate Risk and the United States Financial System

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Background

In May 2022, CarbonPlan, the Environmental Defense Fund (EDF), and the Initiative on Climate Risk and Resilience Law (ICRRL) co-convened a Chatham House Rule workshop to better understand how climate science is used in risk assessment and decision-making across the financial sector. Pursuant to the rule, the meeting organizers and participants agreed to make use of the information received during the workshop, without revealing the affiliation of the speaker (s), nor that of any participant.

The workshop consisted of climate scientists, former policymakers and decisionmakers, and financial and legal experts. Prior to convening this workshop, a literature review was conducted to both assess how climate science is currently used in the financial sector and to develop a series of questions that were used to frame workshop discussion.

The workshop itself was structured around two sessions, centered on (1) the current landscape of *if* and *how* physical climate risk information is currently used, as well as *what* kind of information is currently available across the financial sector; and (2) strategies to address gaps, challenges, and concerns that were identified from the first session.

This document summarizes the discussions from these sessions and identifies the themes that emerged from the workshop.

Emergent Themes

Policymakers and interested stakeholders need to engage directly with each other to determine challenges and identify solutions.

Actors in the financial sector could benefit from a climate science 'translator' to reduce the risk of the misinterpretation or misapplication of climate data.

Robust scientific and practical frameworks are needed to guide the analytical process.

Open-source climate models and data are needed to support stress-testing and scenario analyses.

Summary

Several participants highlighted challenges specific to the insurance industry, noting the dearth of physical climate science or climate models that make forward-looking projections throughout the processes of reserving and underwriting. Some discussants noted that private insurance does not use forward-looking models; instead, pricing is based on the statistical frequency of events over the past 50-years, which occurred under very different climatic conditions.

Some participants suggested that in natural disaster-prone states, many insurers are considering market exit entirely — such as in such as in California (fire insurance) and Florida (flood insurance). The insurance industry faces significant challenges because it appears that some companies may have difficulty aligning risk policies and risk adjustments in certain markets.
At the federal level, various insurance programs – such as the National Flood Insurance Program – have only recently begun to use more sophisticated risk models to price insurance. Mortgage insurance providers like Fannie Mae and Freddie Mac do not yet incorporate any climate risk information. One possible area for further exploration includes the affordability and availability of insurance.

Other discussants focused their remarks on energy systems, noting that public electric utilities primarily use demand estimates based on historical data that spans the past 20 to 40 years and therefore may not be representative of future conditions in a changing climate. On the supply side, physical risks pose relevant harm to assets across the energy system. Companies assess the physical risks associated with infrastructure and highlight the need for resilience.

Participants also highlighted a concern that climate models might not effectively reflect climate extremes and long-tail risks. Extremes are relative to specific business or sector-level contexts, which statistical model outputs may not adequately capture. Discussants identified several entities offering services relevant to identifying and communicating climate risk but also observed a consolidation of the biggest climate-data providers.

Several participants suggested that United States policymakers consider ways to improve stress-testing and scenario analyses, noting that European and Asian regulators have made strides in this area. Discussants also suggested that policymakers would benefit from open-source data regarding the physical impacts of climate change, along with open-source climate models.

At present, extensive physical risk data are publicly available from various government agencies, including the National Oceanic and Atmospheric Administration (NOAA), the United States Geological Survey (USGS), the Federal Emergency Management Agency (FEMA), and the United States Army Corps of Engineers (USACE). However, these datasets were not designed to support analysis of corporate and financial climate-risk. Additional analytical steps are therefore required to 'translate' these data into something more decision-useful to actors across the financial sector. Some participants suggested that efforts to accomplish this have been limited by capacity constraints. Moreover, some tools require extensive training, and several participants highlighted the need for a 'climate translator' – an entity that helps ensure that the physical climate science is not being misinterpreted or over-interpreted.

In terms of data sources, one participant noted that some commercial products could readily be improved, particularly with respect to the extensiveness of underlying information. Other participants noted that data producers generally require significant computational power to develop their data products, such that personnel and resource needs might be significant. Several participants coalesced around best practices, such as looking at the spread of climate models across the full ensemble of available models to ensure that one is not making decisions based on a singular outcome or an unrepresentative value.

Developing a framework that systematically encompasses the physical aspects of hazards and exposure could help with these efforts. There may be a general assumption among financial sector decisionmakers that a top-down, one-size-fits-all climate risk model is already available for use in risk management, but no such tool exists today. Furthermore, any effort to compress all relevant modeling information into a single tool poses significant challenges due to compounding vulnerabilities.

Some discussants suggested instead developing and employing frameworks that guide stakeholders on how to use available data to answer specific climate risk questions.