ADDRESSING CLIMATE AS A SYSTEMIC RISK
A call to action for U.S. financial regulators
EXECUTIVE SUMMARY
ACKNOWLEDGEMENTS

With deep thanks for support from ClimateWorks Foundation and other private funders.

Report Author: Senior Program Director, Capital Markets Systems, Ceres Veena Ramani
Managing Director, Ceres Accelerator for Sustainable Capital Markets Steven M. Rothstein
Chief Executive Officer and President, Ceres Mindy Lubber
Special thanks to Report Consultant Peyton Fleming

Thanks also go to the many colleagues at Ceres who provided invaluable assistance with this project, including Blair Bateson, Sam Burke, Jim Coburn, Maura Conron, George Grattan, Tim Green, Cynthia McHale, Ryan Martel, Brian Sant, Dan Saccardi, Sara Sciammaccio, Troy Shaheen, Alex Wilson and Elise Van Heuven.

Project Contributors
Ceres would like to thank the following people for contributing their valuable time and thoughtful feedback to this project and informing our recommendations. The views expressed in this report are Ceres’ alone and do not necessarily reflect those of these contributors.

Sarah Bloom Raskin former United States Deputy Secretary to the Treasury; Former Member, Federal Reserve Board of Governors, Federal Reserve System
Lucinda Bricker former Senior Vice President, New York Federal Reserve
Mark Carney Special Envoy for Climate Action and Finance, United Nations; former Governor, the Bank of England
Dave Cotney Senior Advisor, FS Vector
Carlos Curbelo former U.S. Congressman, Florida’s 26th Congressional District; Principal, Vocero LLC
Thomas Curry Partner, Nutter McClennen & Fish LLP
Tony Davis CEO and CIO, Inherent Group
Jack Ehnes Chief Executive Officer, CalSTRS
Rick Fleming Investor Advocate, U.S. Securities and Exchange Commission
Gregg Gelzinis Senior Policy Analyst, Center for American Progress
Julie Gorte Senior Vice President, Sustainable Investing, Impax Asset Management
Ilmi Granoff Director of Sustainable Finance Program, ClimateWorks Foundation
Andy Green Managing Director, Economic Policy, Center for American Progress
Robert Hirth Senior Managing Director, Protiviti; Co-vice chair, Sustainability Accounting Standards Board (SASB); Chairman emeritus, Committee of Sponsoring Organizations of the Treadway Commission (COSO)
Bob Inglis former U.S. Congressman, South Carolina’s 4th Congressional District; Executive Director, republicEn.org
Dave Jones Senior Director for Environmental Risk, The Nature Conservancy
Jonas Kron Senior Vice President, Trillium Asset Management
Alexandra Ledbetter Senior Corporation Finance Counsel to the Investor Advocate, U.S. Securities and Exchange Commission
Bob Litterman Partner, Kepos Capital
Leonardo Martinez-Diaz Global Director, Sustainable Finance Center, World Resource Institute
Timothy Massad Former Chair, U.S. Commodity Futures Trading Commission; Former Assistant Secretary for Financial Stability, U.S. Department of the Treasury
Mike Peterson Deputy Commissioner on Climate and Sustainability, California Department of Insurance
Eric Pitt Consultant
Ken Pucker Board Chair, Timbuk2
Janet Ranganathan Vice President of Research, Data and Innovation, World Resource Institute
Sue Reid Principal Advisor, Finance, Mission2020
Samantha Ross Founder, AssuranceMark, the Investors Consortium for Assurance
Mary Schapiro Vice Chair for Global Public Policy and Special Advisor to the Founder and Chairman, Bloomberg L.P.
Barney Schauble Chair, Nephila Climate
Graham Scott Steele Director, Corporations and Society Initiative, Stanford Graduate School of Business
Damon Silvers Director, Policy and Special Counsel, AFL-CIO
Anne Simpson Interim Managing Investment Director, CalPERS
Staff National Association of Insurance Commissioners (NAIC)
Marilyn Waite Program Officer, Environment, Hewlett Foundation
Cynthia Williams Professor, Osgoode Hall Law School, York University
Betty Yee Controller, State of California
LETTER FROM THE CHAIR

I am thrilled that this new Ceres report, “Addressing Climate as a Systemic Risk: A call to action for U.S. financial regulators,” identifies so many important recommendations to address the systemic risk that the climate crisis presents. I have spent many years in risk markets, at the intersection of capital markets and insurance, so I am particularly aware of the importance of climate risk in both industries.

We hope that this first report from the new Ceres Accelerator for Sustainable Capital Markets will contribute to the critical discussions among federal and state regulators, legislators and others focused on these issues.

I hope you will consider joining us to advocate for these changes as quickly as possible.

Barney Schauble
Chair, Ceres Board of Directors
Chairman, Nephila Climate

About the Ceres Accelerator for Sustainable Capital Markets

The Ceres Accelerator for Sustainable Capital Markets (the “Ceres Accelerator”) aims to transform the practices and policies that govern capital markets in order to accelerate action on reducing the worst financial impacts of the global climate crisis and other sustainability threats. The Ceres Accelerator will spur capital market influencers to act on these systemic financial risks and drive the large-scale behavior and systems change needed to achieve a net-zero carbon economy and a just and sustainable future.

For more information visit: ceres.org/accelerator.
REPORT FOREWORD (EXCERPT)

Read the entire foreword in the full report at: ceres.org/reports.

The ongoing COVID-19 pandemic reminds us, daily, of what we miss in our beautiful world and how interconnected and interdependent we all are. The pandemic has exposed that the U.S. is particularly vulnerable to shocks that hit our collective well-being like those related to health and climate; that financial markets cannot perform the work of assuring collective well-being; and that the magnitude of a crisis is determined not just by the impact of precipitating events, but by the fragility of the system it attacks. The world has been forced into a recalibration of values.

"Addressing Climate as a Systemic Risk" underscores that it is possible to act before catastrophe, and that there is opportunity in preemptive, early and bold actions by federal economic policy makers looking to avoid catastrophe. The tools exist. They are available now, and ready to be picked up and deployed.

With both breadth and depth, Ceres offers more than 50 specific recommendations covering seven key federal financial regulatory agencies, along with state and federal insurance regulators. These recommendations outline the affirmative steps regulators should take to protect the financial system and economy from potential climate-related shocks that can flatten an economy and grind it to dust. Climate change affects financial stability, and [in this report] Ceres provides the action plans for federal financial regulators to do the work to protect that stability -- now.

At the very least, we must rebuild with an economy where the values of sustainability are explicitly embedded in market valuation. Let's leave behind our former sense of what’s possible, while moving toward an environment and an economy that we have confidence--this time--can be sustained.

Sarah Bloom Raskin
Former United States Deputy Secretary of the Treasury
Former Member, Federal Reserve Board of Governors
EXECUTIVE SUMMARY

Systemic risks have the potential to destabilize capital markets and lead to serious negative consequences for financial institutions and the broader economy. Under this definition, climate change, like the current COVID-19 crisis, is indisputably a systemic risk. Its wide-ranging physical impacts, combined with expected transitions to a net-zero carbon economy and other socio-economic ripples, are likely to manifest in both cumulative and unexpected ways and present clear systemic risks to U.S. financial markets -- and the broader economy. Left unmanaged, these risks could have significant, disruptive consequences on asset valuations, global financial markets and global economic stability.

This Ceres report, “Addressing Climate as a Systemic Risk: A call to action for U.S. financial regulators,” outlines how and why U.S. financial regulators, who are responsible for protecting the stability and competitiveness of the U.S. economy, need to recognize and act on climate change as a systemic risk. It provides more than 50 recommendations for key financial regulators to adopt, including the Federal Reserve Bank (the Fed), the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC), the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CTFC), state and federal insurance regulators, the Federal Housing Finance Agency (FHFA), and the Financial Stability Oversight Council (FSOC).

Given the ongoing response to the COVID-19 pandemic, the role of financial regulators is more prominent than ever. While financial regulators are taking critical actions to support the U.S. economy in response to this immediate crisis, it is imperative that their efforts do not inadvertently worsen the impacts of climate change.

“...The evidence on climate risk is compelling investors to reassess core assumptions about modern finance. Research from a wide range of organizations – including the U.N.’s Intergovernmental Panel on Climate Change, the BlackRock Investment Institute, and many others, including new studies from McKinsey on the socioeconomic implications of physical climate risk – is deepening our understanding of how climate risk will impact both our physical world and the global system that finances economic growth.”

“These questions are driving a profound reassessment of risk and asset values. And because capital markets pull future risk forward, we will see changes in capital allocation more quickly than we see changes to the climate itself. In the near future – and sooner than most anticipate – there will be a significant reallocation of capital.”

Larry Fink
Chairman and CEO, BlackRock
“A fundamental reshaping of finance,”
Fink’s 2020 CEO Letter to BlackRock portfolio companies
ADDRESSING CLIMATE AS A SYSTEMIC RISK

**Frequent extreme weather events are leading to mounting economic losses.**
Physical risks from rising global temperatures – up 1.8° F since the mid-20th century – are the most immediate threat to the U.S. economy. Catastrophic flooding, droughts, wildfires and storms are becoming more frequent and extreme and have caused billions of dollars in financial losses. As global greenhouse gas (GHG) emissions and temperatures continue to rise, deeper economic losses are projected for the years ahead.

The Fourth National Climate Assessment (Vol.11), based on the work of thousands of researchers, suggests that unmitigated climate change could reduce the U.S. economy by as much as 10% annually by 2100. In a 2019 CDP survey, 215 of the world’s largest listed companies reported nearly $1 trillion at risk from climate impacts, much of it in the next five years. A London School of Economics study projects that, unless it is addressed, climate change could reduce the value of global financial assets by as much as $24 trillion – resulting in permanent damage that would far eclipse the scale of the 2007-2009 financial crisis.

**Social and environmental factors are exacerbating the economic impacts.**
Unmitigated climate change and extreme weather events will have significant health impacts, including respiratory issues, the spread of diseases and premature deaths. Climate change and extreme weather events will also create major productivity losses, particularly in industries that require workers to be outside. Migration forced by climate change has already displaced an average of 26.4 million people per year globally between 2008 and 2015. By 2050, climate change will force 50 to 700 million people to emigrate. Finally, the rapid loss of forests and other ecosystems is starting to impact ecosystem-dependent industries such as agriculture, tourism, drinking water and pharmaceuticals.

**Climate impacts are already manifesting in the largest state economies.**
In just the last few years, California has experienced recording-breaking wildfires, in both number and size, that have taken hundreds of lives, bankrupted the state’s largest utility, left millions regularly without power and brought home insurability into question. Florida is facing rapidly rising sea levels and now-routine flooding that are eroding coastal property values and wiping out freshwater supplies. Texas experienced two devastating once-in-a-thousand-years flood events between 2016 and 2019, each caused by torrential rains of 40 inches or more.

**An unplanned transition to a low-or-zero-carbon economy could cripple key industries.**
Changes in government policies, consumer sentiment, liability risks and technological innovation could cause significant losses for high-carbon industry sectors, and those that rely on them. Given the large size of these industries, these cumulative losses could send broad, intersecting and amplifying financial ripples on major financial institutions holding related assets.

Economists and financial leaders say the scale of the losses from climate change could eclipse the subprime mortgage securities meltdown that triggered bank failures and, ultimately, a deep global recession a dozen years ago. “Even if only a fraction of the [climate] science is right, this is a much more structural, long-term crisis [than the 2007-2009 recession],” said BlackRock CEO Larry Fink in 2020.

Despite these risks, national and global efforts to mitigate climate change’s impacts could create enormous clean energy investment opportunities that would translate into economic growth and job creation. Research suggests that transitioning to a low-carbon sustainable economy could deliver direct economic gains of $26 trillion through 2030, compared to business as usual.
Insurance companies and banks are on the frontlines of risk.
The insurance sector is particularly vulnerable to the physical impacts of climate change, and has already faced growing losses; insurers’ investments are also at risk. Banks and financial institutions that have lent to and invested in risky, carbon-intensive sectors have the potential to have their investments become “stranded” in the face of the transition to a low-or-zero-carbon future.

The cumulative and unpredictable nature of climate impacts poses a risk to financial market stability.
While any of the impacts outlined above are significant, their cumulative, correlated and nonlinear nature poses the real risk to financial market stability. To put it simply, the whole is not only greater than the sum of its parts – it magnifies them, as well. If climate change affects markets suddenly and unexpectedly, it could burst a “carbon bubble,” which could pose grave dangers to financial markets and the real economy, already weakened from the ongoing coronavirus pandemic.

At the same time, the response to the pandemic has also underscored the power financial regulators have to buttress markets in the face of a disruptive risk. With that power, regulators also have the responsibility to assess market vulnerability to such risks, and take action to make the economy resilient to such shocks. As stewards of the largest economy in the world, U.S. financial regulators, including the Federal Reserve, the SEC and others, have critical roles to play. They can send the appropriate market signals about the risks posed by climate change to the U.S. and global economy, and take the necessary steps to recalibrate our financial system.

ACTIONS NEEDED

This report outlines why and how key U.S. financial regulators can and should take action to protect the financial system and economy from potentially devastating climate-related shocks. Financial regulators have a mandate to maintain financial market stability, foster capital growth and competitiveness, protect consumers and investors and ensure market efficiency and integrity. Climate risk is relevant to each of these considerations.

This report focuses on the roles of those financial regulators that Ceres believes are particularly important to jumpstart the necessary action on climate risk now. However, we also believe that all regulators – financial and otherwise – have important roles to play in addressing the climate risk. “Addressing Climate as a Systemic Risk” makes a series of recommendations that build on the existing mandates of the relevant regulatory agencies. We also identify similar actions being taken by global regulators that could serve as important models for U.S. agencies to consider.
Our key recommendations:

The Federal Reserve System, including the Federal Reserve Bank, should:
- Acknowledge that climate change poses risks to financial market stability and immediately begin assessing their impacts. This includes building awareness of regional climate vulnerabilities, and conducting the needed research.
- Integrate climate change into their prudential supervision and regulation of systemically important financial institutions to ensure they adequately address climate change as a part of their risk management and are well prepared for transition risks. One clear opportunity is to require financial institutions to conduct climate stress tests. Another opportunity is to work with the SEC and other agencies to require banks to assess and disclose climate risks, including carbon emissions from their lending and investment activities. Finally, the Fed should coordinate with its global counterparts to define activities that are likely to exacerbate climate risks.
- Explore how climate risks can be addressed through monetary policy to keep the economy resilient in the face of disruptive risks. This policy assessment should include considering the climate impacts of injecting more liquidity into the economy, and integrating climate risk into collateral frameworks and economic outlook assessments.
- Explore the integration of climate risk into the community reinvestment process to bolster the resilience of low-income communities to climate change.
- Join efforts, such as the Network for the Greening the Financial System, and to allow for globally coordinated efforts on climate risks.

“When you put all these pieces together, it becomes pretty clear: climate change is an economic issue we can’t afford to ignore.

This isn’t just a concern for the Twelfth District. Or even the United States. Countries around the world are dealing with the economic impacts of climate change. And conferences like this are essential to understanding the challenges that lie ahead – for all of us.

Ultimately, this is our job. The San Francisco Fed is a public service organization. We’re responsible for the people and the communities we serve. So, we have to get out in front of this issue and do what we do best.

Convene the best people and ideas. Study data and conduct research. Talk to the communities we serve – and really listen when they tell us what they need.”

Mary Daly
President and CEO, Federal Reserve Bank of San Francisco
“Why climate change matters to us,” November 2019

The Office of the Comptroller of the Currency and the Federal Deposit Insurance Corporation should:
- Coordinate with each other and all banking regulators to ensure that climate change is integrated into the financial supervision process. This integration could include jointly issuing a bulletin highlighting the wide ranging ways that climate risks could impact financial performance and outlining principles to help financial institutions prudently manage them.
- (OCC) update the Comptroller’s Handbook to issue enhanced guidance on climate risk to examiners, to be used in supervision of financial institutions. They should also integrate climate-risk supervision into the examiner education process.
- (FDIC) closely monitor the impacts of climate risk on bank lending and investments activities and explore how to integrate climate risk into the risk-based premium system for the Deposit Insurance Fund.
The **Securities and Exchange Commission** should:

- Analyze climate risk impacts on the securities markets and on the SEC mandate, and consider establishing a cross-divisional taskforce to allow for coordinated responses.
- Make clear that consideration of material environmental, social and governance (ESG) risk factors, such as climate change, is consistent with investor fiduciary duty.
- Issue rules mandating corporate climate risk disclosure, building on the framework established by the Financial Stability Board’s Task Force on Climate-related Financial Disclosures (TCFD). In the short term, the SEC should enforce the existing regulations and interpretive guidance on climate risk.
- Direct the Public Company Accounting Oversight Board (PCAOB), overseen by the SEC, to assess whether firm audits adequately detect climate risks, and issue guidance to help auditors better understand how climate risk affects audits and accounting. The PCAOB should also assess existing standards to identify when amendments and updates may be needed, and issue such amendments.
- Encourage the Financial Accounting Standards Board to drive consistency in the way that climate risk is disclosed in financial statements.
- Issue guidance encouraging credit raters to provide more disclosure on how climate risk factors are factored in ratings decisions. They could also examine the extent to which climate risk is considered by credit raters, and summarize findings in annual examination reports.

The **Commodity Futures Trading Commission** should:

- Upon receiving the Climate-Related Market Risk Subcommittee’s report, engage other financial regulators on climate change.
- Use the report’s recommendations to enhance oversight of climate risk in the commodities and derivatives market.

**State and federal insurance regulators** should:

- Acknowledge the material risks climate change poses to the insurance sector and pledge coordinated action to address them.
- Assess the adequacy of current insurer actions for addressing climate risks.
- Join the Sustainable Insurance Forum.
- Require insurance companies to conduct climate risk stress tests and scenario analyses to evaluate potential financial exposure to climate change risks.
- Require insurers to integrate climate change into their Enterprise Risk Management (ERM) and Own Risk and Solvency Assessments (ORSA) processes.
- (State regulators) require insurance companies to assess and manage their climate risk exposure through their investments, and examine how climate trends affect company holdings and long-term solvency.
- (State regulators) encourage insurers to develop products for the new technologies, practices and business models that will emerge in response to climate risk that are responsive to both risks and opportunities.
- (State regulators) mandate insurer climate risk disclosure using the TCFD recommendations.
- Assess the sector’s vulnerabilities to climate change, and report findings to the Financial Stability Oversight Council.

“We purport to modernize, without mentioning what may be the single most momentous risk to face markets since the financial crisis. Where we should be showing leadership, we are conspicuously silent. In so doing, we risk falling behind international efforts and putting U.S. companies at a competitive disadvantage globally.”

**Allison Herren Lee**  
Commissioner, Securities and Exchange Commission

“Modernizing’ Regulation S-K: Ignoring the elephant in the room,” January 2020
The **Federal Housing Finance Authority**, responsible for government-sponsored mortgage giants Freddie Mae and Fannie Mae, should:

- Acknowledge the impacts of climate risk on the housing market.
- Conduct research to examine the impacts of climate risk on the mortgage holdings of Government-Sponsored Enterprises, particularly Fannie Mae and Freddie Mac.
- Launch a formal effort to develop strategies to address climate risk, being particularly aware of the impacts on vulnerable communities disproportionately threatened by climate change.

The **Financial Stability Oversight Council**, whose mandate is to identify risks to financial stability, should:

- Identify climate risk as a vulnerability and make recommendations on regulations that relevant agencies could adopt.
- Coordinate regulatory actions on climate change and the integration of efforts by all financial regulators addressing climate risk to allow for overall financial stability.

**CONCLUSION**

Ceres knows that climate change is the biggest sustainability issue of our time, affecting everything from our financial markets, to our political security to our very existence on earth. For over three decades, Ceres has worked with companies, investors and policy makers to drive the consideration of climate change as a financial risk, and foster the uptake of climate solutions. We also believe that legislative action on climate change – such as a carbon price – is necessary to move the U.S. economy towards a competitive and prosperous net-zero carbon future.

But while policymakers at the federal, state and global levels need to take the lead in tackling the climate crisis, U.S. financial regulators themselves have critical roles to play in keeping a now-weakened economy resilient in the face of ongoing and future climate shocks. Rather than standing back, they should seize the opportunity in this moment of potential economic transformation to join global peers and develop a playbook for climate action. With global emissions and average temperatures still rising, watching and waiting are no longer responsible options, and will in fact guarantee the worst. And, unlike in the possible resolution to the COVID-19 pandemic, there will never be vaccines developed to protect against climate risk. But the good news is: we already have all the tools and knowledge in the financial markets to take sound preventative action.

Climate change presents risks to both the future and today -- unless regulators act boldly, now.