

Executive Summary

Climate change poses a major risk to the stability of the U.S. financial system and to its ability to sustain the American economy. Climate change is already impacting or is anticipated to impact nearly every facet of the economy, including infrastructure, agriculture, residential and commercial property, as well as human health and labor productivity. Over time, if significant action is not taken to check rising global average temperatures, climate change impacts could impair the productive capacity of the economy and undermine its ability to generate employment, income, and opportunity. Even under optimistic emissions-reduction scenarios, the United States, along with countries around the world, will have to continue to cope with some measure of climate change-related impacts.

This reality poses complex risks for the U.S. financial system. Risks include disorderly price adjustments in various asset classes, with possible spillovers into different parts of the financial system, as well as potential disruption of the proper functioning of financial markets. In addition, the process of combating climate change itself—which demands a large-scale transition to a net-zero emissions economy—will pose risks to the financial system if markets and market participants prove unable to adapt to rapid changes in policy, technology, and consumer preferences. Financial system stress, in turn, may further exacerbate disruptions in economic activity, for example, by limiting the availability of credit or reducing access to certain financial products, such as hedging instruments and insurance.

A major concern for regulators is what we don't know. While understanding about particular kinds of climate risk is advancing quickly, understanding about how different types of climate risk could interact remains in an incipient stage. Physical and transition risks may well unfold in parallel, compounding the challenge. Climate risks may also exacerbate financial system vulnerabilities that have little to do with climate change, such as historically high levels of corporate leverage. This is particularly concerning in the short- and medium-term, as the COVID 19 pandemic is likely to leave behind stressed balance sheets, strained government budgets, and depleted household wealth, which, taken together, undermine the resilience of the financial system to future shocks.

The central message of this report is that U.S. financial regulators must recognize that climate change poses serious emerging risks to the U.S. financial system, and they should move urgently and decisively to measure, understand, and address these risks. Achieving this goal calls for strengthening regulators' capabilities, expertise, and data and tools to better monitor, analyze, and quantify climate risks. It calls for working closely with the private sector to ensure that financial institutions and market participants do the same. And it calls for policy and regulatory choices that are flexible, open-ended, and adaptable to new information about climate change and its risks, based on close and iterative dialogue with the private sector.

At the same time, the financial community should not simply be reactive—it should provide solutions. Regulators should recognize that the financial system can itself be a catalyst for investments that accelerate economic resilience and the transition to a net-zero emissions economy. Financial innovations, in the form of new financial products, services, and technologies, can help the U.S. economy better manage climate risk and help channel more capital into technologies essential for the transition.

Findings of the Report

This report begins with a fundamental finding—financial markets will only be able to channel resources efficiently to activities that reduce greenhouse gas emissions if an economy-wide price on carbon is in place at a level that reflects the true social cost of those emissions. Addressing climate change will require policy frameworks that incentivize the fair and effective reduction of greenhouse gas emissions. In the absence of such a price, financial markets will operate suboptimally, and capital will continue to flow in the wrong direction, rather than toward accelerating the transition to a net-zero emissions economy. At the same time, policymakers must be sensitive to the distributional impacts of carbon pricing and other policies and ensure that the burden does not fall on low-to-moderate income households and on historically marginalized communities. This report recognizes that pricing carbon is beyond the remit of financial regulators; it is the job of Congress.

A central finding of this report is that climate change could pose systemic risks to the U.S. financial system. Climate change is expected to affect multiple sectors, geographies, and assets in the United States, sometimes simultaneously and within a relatively short timeframe. As mentioned earlier, transition and physical risks—as well as climate and non-climate-related risks—could interact with each other, amplifying shocks and stresses. This raises the prospect of spillovers that could disrupt multiple parts of the financial system simultaneously. In addition, systemic shocks are more likely in an environment in which financial assets do not fully reflect climate-related physical and transition risks. A sudden revision of market perceptions about climate risk could lead to a disorderly repricing of assets, which could in turn have cascading effects on portfolios and balance sheets and therefore systemic implications for financial stability.

At the same time, this report finds that regulators should also be concerned about the risk of climate-related “sub-systemic” shocks. Sub-systemic shocks are defined in this report as those that affect financial markets or institutions in a particular sector, asset class, or region of the country, but without threatening the stability of the financial system as a whole. This is especially relevant for the United States, given the country’s size and its financial system, which includes thousands of financial institutions, many regulated at the state level. Sub-systemic shocks related to climate change can undermine the financial health of community banks, agricultural banks, or local insurance markets, leaving small businesses, farmers, and households without access to critical financial services. This is particularly damaging in areas that are already underserved by the financial system, which includes low-to-moderate income communities and historically marginalized communities.

The report finds that, in general, existing legislation already provides U.S. financial regulators with wide-ranging and flexible authorities that could be used to start addressing financial climate-related risk now. This is true across four areas—oversight of systemic financial risk, risk management of particular markets and financial institutions, disclosure and investor protection, and the safeguarding of financial sector utilities. Presently, however, these authorities and tools are not being fully utilized to effectively monitor and manage climate risk. Further rulemaking, and in some cases legislation, may be necessary to ensure a coordinated national response.

While some early adopters have moved faster than others in recent years, regulators and market participants around the world are generally in the early stages of understanding and experimenting with how best to monitor and manage climate risk. Given the considerable complexities and data challenges involved, this report points to the need for regulators and market participants to adopt pragmatic approaches that stress continual monitoring, experimentation, learning, and global coordination. Regulatory approaches in this area are evolving and should remain open to refinement, especially as understanding of climate risk continues to advance and new data and tools become available.

Insufficient data and analytical tools to measure and manage climate-related financial risks remain a critical constraint. To undertake climate risk analysis that can inform decision-making across the financial system, regulators and financial institutions need reliable, consistent, and comparable data and projections for climate risks, exposure, sensitivity, vulnerability, and adaptation and resilience. Demand will likely grow for public and open access to climate data, including for primary data collected by the government. Public data will enable market participants to, among other things, compare publicly available disclosure information and sustainability-benchmarked financial products. At the same time, proprietary data and analytical products can introduce innovations that improve climate risk management. A key challenge will be how best to balance the need for transparency through public data on one hand, with the need to foster private innovation through proprietary data, on the other.

The lack of common definitions and standards for climate-related data and financial products is hindering the ability of market participants and regulators to monitor and manage climate risk. While progress has been made in this area thanks to voluntary disclosure frameworks and work by foreign regulators, the lack of standards, and differences among standards, remains a barrier to effective climate risk management. The problem is compounded by a lack of international coordination on data and methodology standards. A common set of definitions for climate risk data, including modeling and calculation methodologies, is important for developing the consistent, comparable, and reliable data required for effective risk management. Also, taxonomies or classification systems can help foster greater transparency and comparability in markets for financial products labeled as “green” or “sustainable.”

Climate-related scenario analysis can be a useful tool to enable regulators and market participants to understand and manage climate-related risks. Scenarios illustrate the complex connections and dependencies across technologies, policies, geographies, societal behaviors, and economic outcomes as the world shifts toward a net-zero emissions future. Scenario analysis can help organizations integrate climate risks and opportunities into a broader risk management framework, as well as understand the potential short-term impact of specific triggering events. Scenario analysis is gaining traction in several contexts, both domestically and internationally, and regulators are increasingly using scenario analysis to foster greater risk awareness among financial market actors.

Yet, the limitations of scenario analysis should be recognized. While useful, climate scenarios and the models that analyze them have important limitations. Scenarios are sensitive to key assumptions and parameters, most have been developed for purposes other than financial risk analysis, and they cannot fully capture all the potential effects of climate- and policy-driven outcomes. Scenario analysis should have a valuable place in the risk management toolkit, but it should be used with full awareness of what it can and cannot do.

The disclosure by corporations of information on material, climate-related financial risks is an essential building block to ensure that climate risks are measured and managed effectively. Disclosure of such information enables financial regulators and market participants to better understand climate change impacts on financial markets and institutions. Issuers of securities can use disclosure to communicate risk and opportunity information to capital providers, investors, derivatives customers and counterparties, markets, and regulators. Issuers of securities can also use disclosures to learn from peers about climate-related strategy and best practices in risk management. Investors can use climate-related disclosures to assess risks to firms, margins, cash flows, and valuations, allowing markets to price risk more accurately and facilitating the risk-informed allocation of capital.

Demand for disclosure of information on material, climate-relevant financial risks continues to grow, and reporting initiatives have led to important advances. Investors and financial market actors have long called for *decision useful* climate risk disclosures, and in 2019, more than 630 investors managing more than \$37 trillion signed the

Global Investor Statement to Governments on Climate Change, which called on governments to improve climate-related financial reporting. Disclosure frameworks have been developed to enhance the quality and comparability of corporate disclosures, most notably, the Task Force on Climate-related Financial Disclosures (TCFD). Also, in 2010, the U.S. Securities and Exchange Commission (SEC) published *Commission Guidance Regarding Disclosure Related to Climate Change*, which provides public companies with interpretive guidance on existing SEC disclosure requirements as they apply to climate change.

However, the existing disclosure regime has not resulted in disclosures of a scope, breadth, and quality to be sufficiently useful to market participants and regulators. While disclosure rates are trending in a positive direction, an update published by the TCFD found that surveyed companies only provided, on average, 3.6 of the 11 total TCFD recommended disclosures. Large companies are increasingly disclosing some climate-related information, but significant variations remain in the information disclosed by each company, making it difficult for investors and others to understand exposure and manage climate risks. In addition, the 2010 SEC *Guidance* has not resulted in high-quality disclosure across U.S. publicly listed firms; it could be updated in light of global advancements in the past 10 years.

In addition to the absence of an economy-wide carbon pricing regime in the United States, other barriers are holding back capital from flowing to sustainable, low-carbon activities. One involves the misperception among mainstream investors that sustainable or ESG (environmental, social, and governance) investments necessarily involve trading off financial returns relative to traditional investment strategies. Another is that the market for products widely considered to be “green” or “sustainable” remains small relative to the needs of institutional investors. In addition, lack of trust in the market over concerns of potential “greenwashing” (misleading claims about the extent to which a financial product or service is truly climate-friendly or environmentally sustainable) may be holding back the market. And policy uncertainty also remains a barrier, including in areas such as regulation affecting the financial products that U.S. companies may offer their employees through their employer-provided retirement plans.

These barriers can be addressed through a variety of initiatives. For example, a wide range of government efforts—through credit guarantees and other means of attracting private capital by reducing the risks of low-carbon investments—catalyze capital flows toward innovation and deployment of net-zero emissions technologies. A new, unified federal umbrella could help coordinate and expand these government programs and leverage institutional capital to maximize impact and align the various federal programs. Climate finance labs, regulatory sandboxes, and other regulatory initiatives can also drive innovation by improving dialogue and learning for both regulators and market innovators, as well as via business accelerators, grants, and competitions providing awards in specific areas of need. In addition, clarifying existing regulations on fiduciary duty, including for example, those concerning retirement and pension plans, to confirm the appropriateness of making investment decisions using climate-related factors—and more broadly, ESG factors that impact risk-return—can help unlock the flow of capital to sustainable activities and investments.

Derivatives markets can be part of the solution. Refinements or modifications could be made to existing instruments to reduce derivatives market participants' risk exposure. For example, commodity derivatives exchanges could address climate and sustainability issues by incorporating sustainability elements into existing contracts and by developing new derivatives contracts to hedge climate-related risks. New products may include weather, ESG, and renewable generation and electricity derivatives. However, development of new derivatives will require that the relevant climate-related data is transparent, reliable, and trusted by market participants. This also applies to a wide range of asset classes that can direct capital to climate-related opportunities and help manage climate risk.

U.S. regulators are not alone in confronting climate change as a financial system risk; international engagement by the United States could be significantly more robust. Financial regulators and other actors have launched important initiatives to tackle the challenge. The United States already participates in the Basel Committee on Banking Supervision's climate task force, the International Organization of Securities Commissions (IOSCO) sustainable finance network, and relevant committees within the Financial Stability Board (FSB) to study climate-related financial risks. However, at the federal level the United States is not yet a member of the Central Banks and Supervisors Network for Greening the Financial System (NGFS), the Coalition of Finance Ministers for Climate Action, or the Sustainable Insurance Forum (SIF). The Group of Seven (G7) and Group of Twenty (G20), in which the United States plays a central role, could also address this challenge and promote international cooperation, but only if the United States is supportive.

Key Recommendations

The full list of the report's recommendations can be found at the end of relevant chapters and compiled in an annex at the end of this report. Below, we highlight some of the most important.

We recommend that:

- The United States should establish a price on carbon. It must be fair, economy-wide, and effective in reducing emissions consistent with the Paris Agreement. This is the single most important step to manage climate risk and drive the appropriate allocation of capital. (Recommendation 1)
- All relevant federal financial regulatory agencies should incorporate climate-related risks into their mandates and develop a strategy for integrating these risks in their work, including into their existing monitoring and oversight functions. (Recommendation 4.1)
- The Financial Stability Oversight Council (FSOC)—of which the Commodity Futures Trading Commission (CFTC) is a voting member—as part of its mandate to monitor and identify emerging threats to financial stability, should incorporate climate-related financial risks into its existing oversight function, including its annual reports and other reporting to Congress. (Recommendation 4.2)

- Research arms of federal financial regulators should undertake research on the financial implications of climate-related risks. This research program should cover the potential for and implications of climate-related “sub-systemic” shocks to financial markets and institutions in particular sectors and regions of the United States, including, for example, agricultural and community banks and financial institutions serving low-to-moderate income or marginalized communities. (Recommendation 4.3)
- U.S. regulators should join, as full members, international groups convened to address climate risks, including the Central Banks and Supervisors Network for Greening the Financial System (NGFS), the Coalition of Finance Ministers for Climate Action, and the Sustainable Insurance Forum (SIF). The United States should also engage actively to ensure that climate risk is on the agenda of G7 and G20 meetings and bodies, including the FSB and related committees and working groups. (Recommendation 4.6)
- Financial supervisors should require bank and nonbank financial firms to address climate-related financial risks through their existing risk management frameworks in a way that is appropriately governed by corporate management. That includes embedding climate risk monitoring and management into the firms’ governance frameworks, including by means of clearly defined oversight responsibilities in the board of directors. (Recommendation 4.7)
- Working closely with financial institutions, regulators should undertake—as well as assist financial institutions to undertake on their own—pilot climate risk stress testing as is being undertaken in other jurisdictions and as recommended by the NGFS. This climate risk stress testing pilot program should include institutions such as agricultural, community banks, and non-systemically important regional banks. (Recommendation 4.8) In this context, regulators should prescribe a consistent and common set of broad climate risk scenarios, guidelines, and assumptions and mandate assessment against these scenarios. (Recommendation 6.6)
- Financial authorities should consider integrating climate risk into their balance sheet management and asset purchases, particularly relating to corporate and municipal debt. (Recommendation 4.10)
- The CFTC should undertake a program of research aimed at understanding how climate-related risks are impacting and could impact markets and market participants under CFTC oversight, including central counterparties, futures commission merchants, and speculative traders and funds; the research program should also cover how the CFTC’s capabilities and supervisory role may need to adapt to fulfill its mandate in light of climate change and identify relevant gaps in the CFTC’s regulatory and supervisory framework. (Recommendation 4.11)

- State insurance regulators should require insurers to assess how their underwriting activity and investment portfolios may be impacted by climate-related risks and, based on that assessment, require them to address and disclose these risks. (Recommendation 4.12)
- Financial regulators, in coordination with the private sector, should support the availability of consistent, comparable, and reliable climate risk data and analysis to advance the effective measurement and management of climate risk. (Recommendation 5.1)
- Financial regulators, in coordination with the private sector, should support the development of U.S.-appropriate standardized and consistent classification systems or taxonomies for physical and transition risks, exposure, sensitivity, vulnerability, adaptation, and resilience, spanning asset classes and sectors, in order to define core terms supporting the comparison of climate risk data and associated financial products and services. To develop this guidance, the United States should study the establishment of a Standards Developing Organization (SDO) composed of public and private sector members. (Recommendation 5.2)
- Material climate risks must be disclosed under existing law, and climate risk disclosure should cover material risks for various time horizons. To address investor concerns around ambiguity on when climate change rises to the threshold of materiality, financial regulators should clarify the definition of materiality for disclosing medium- and long-term climate risks, including through quantitative and qualitative factors, as appropriate. (Recommendation 7.2)
- In light of global advancements in the past 10 years in understanding and disclosing climate risks, regulators should review and update the SEC’s 2010 *Guidance* on climate risk disclosure to achieve greater consistency in disclosure to help inform the market. Regulators should also consider rulemaking, where relevant, and ensure implementation of the *Guidance*. (Recommendation 7.5)
- Regulators should require listed companies to disclose Scope 1 and 2 emissions. As reliable transition risk metrics and consistent methodologies for Scope 3 emissions are developed, financial regulators should require their disclosure, to the extent they are material. (Recommendation 7.6)
- The United States should consider integration of climate risk into fiscal policy, particularly for economic stimulus activities covering infrastructure, disaster relief, or other federal rebuilding. Current and ongoing fiscal policy decisions have implications for climate risk across the financial system. (Recommendation 8.1)

- The United States should consolidate and expand government efforts, including loan authorities and co-investment programs, that are focused on addressing market failures by catalyzing private sector climate-related investment. This effort could centralize existing clean energy and climate resilience loan authorities and co-investment programs into a coordinated federal umbrella. (Recommendation 8.2)
- Financial regulators should establish climate finance labs or regulatory sandboxes to enhance the development of innovative climate risk tools as well as financial products and services that directly integrate climate risk into new or existing instruments. (Recommendation 8.3)
- The United States and financial regulators should review relevant laws, regulations and codes and provide any necessary clarity to confirm the appropriateness of making investment decisions using climate-related factors in retirement and pension plans covered by the Employee Retirement Income Security Act (ERISA), as well as non-ERISA managed situations where there is fiduciary duty. This should clarify that climate-related factors—as well as ESG factors that impact risk-return more broadly—may be considered to the same extent as “traditional” financial factors, without creating additional burdens. (Recommendation 8.4)
- The CFTC should coordinate with other regulators to support the development of a robust ecosystem of climate-related risk management products. (Recommendation 8.5)