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Protecting the Financial System from Risks Associated with Climate Change”

**Climate Change and the U.S. Financial System:
Risks, Opportunities, and the Role of Financial Regulators and Policy Makers**

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1. INTRODUCTION

Climate change is one of the defining challenges of our time. Its impacts become more visible every year, not only in hotter temperatures, rising seas, and melting glaciers but also in extreme weather: wildfires, heat waves, hurricanes, floods, droughts. The economic consequences of these impacts loom large, amounting to hundreds of billions of dollars every year to the United States alone from current emissions.

As the world’s second-largest emitter and largest historical emitters, the United States has an obligation to lead the world in addressing climate change by taking action across the U.S. economy. To help reduce the risk of catastrophic climate change, in line with the latest climate science and with the objectives of the Paris Agreement on climate change, the U.S. should achieve net zero emissions across the entire economy – the point at which we emit no more carbon pollution than we can remove from the atmosphere – by no later than 2050, including an interim target of cutting emissions at least 50% below 2005 levels by 2030. A range of recent analyses

demonstrate the these goals are achievable with well-designed government policies and investments to reduce greenhouse gas emissions from sectors including electric power generation, transportation, industry, buildings, and fossil fuel production; manage forests, croplands, and rangelands to store carbon; and increase the resilience of natural and physical infrastructure, especially in coastal areas.¹

The good news is that study after study has shown that the investments needed to put the U.S. economy on a path to net zero emissions will also help to strengthen the nation’s economy, ensure good jobs, and enhance America’s competitiveness in the global clean energy economy.

In addition to the massive aggregate economic damages mentioned above, there is a growing realization that climate change poses a significant risk to the U.S. financial system as well – both potentially to the financial system as a whole, as well as to specific types of financial institutions in particular sectors and regions. In this context, policy makers and financial and prudential regulators have a range of tools available that could help to significantly mitigate the risk to the financial system, particularly by ensuring greater transparency around the nature, magnitude, and distribution of climate risk and requiring that regulatory bodies and private companies more thoroughly incorporate climate change into their risk management and decision making. In addition, in light of the enormous and growing demand from private investors for sustainable and climate-friendly investing, policy makers and regulators can take steps to reduce the barriers to such investing.

With this context in mind, my testimony makes three main points.

First, **climate change poses significant risks to the U.S. financial system.** In detailing these potential risks, I draw extensively on a recent report published by the Climate-Related Market Risk Subcommittee of the Commodity Futures Trading Commission’s Market Risk Advisory Committee, of which I was a co-author.

¹ See National Academies of Sciences, Engineering, and Medicine, *Accelerating Decarbonization of the U.S. Energy System* (Washington, DC: The National Academies Press, 2021), <https://doi.org/10.17226/25932>; E. Larson, C. Greig, J. Jenkins, E. Mayfield, A. Pascale, C. Zhang, J. Drossman, R. Williams, S. Pacala, R. Socolow, EJ Baik, R. Birdsey, R. Duke, R. Jones, B. Haley, E. Leslie, K. Paustian, and A. Swan, *Net-Zero America: Potential Pathways, Infrastructure, and Impacts*, interim report (Princeton University, 2020). <https://perma.cc/Z2ZT-BHLM> ; Environmental Defense Fund, “Recapturing U.S. Leadership on Climate: Setting an Ambitious and Credible Nationally Determined Contribution” (Environmental Defense Fund, 2021), <https://perma.cc/3UXP-2EPM>.

Second, **financial regulators have a clear responsibility to address climate risk under their foundational duties and authorities.** I put special emphasis on the importance of mandatory climate risk disclosure, and also discuss a range of other recommendations related to incorporating climate risk into risk management practices of regulated firms, increasing the relevant expertise of regulators, and improving data availability.

Third, **there is significant demand– and opportunity – to channel private capital into low-carbon and climate-friendly investment.** In addition to noting the rising demand among private investors for such opportunities, I highlight the single most important thing policy makers could do to ensure that private capital flows more efficiently to low-carbon opportunities: namely, implementing a fair and effective price on carbon across the U.S. economy.

2. CLIMATE-RELATED RISKS TO THE U.S. ECONOMY AND THE FINANCIAL SYSTEM

2.1 Economic damages and financial risk

The impacts of climate change on the U.S. financial system were the focus of the Climate-Related Market Risk Subcommittee of the Market Risk Advisory Committee of the Commodity Futures Trading Commission, on which I served. Along with the other subcommittee members, I was a co-author of the subcommittee’s report, *[Managing Climate Risk in the U.S. Financial System](#)*, which was the first of its kind to be released under the auspices of a U.S. financial regulator.² The report was unanimously approved by the subcommittee’s 34 members – experts representing banks, asset managers, agribusiness, the oil and gas sector, academia and environmental organizations. In this section, I draw extensively on that report to discuss climate-related risks to the U.S. financial system.

The report conveys a stark message to financial institutions, regulators, and policy makers: climate change poses serious risks that, if ignored, will undermine the financial system’s ability to support the American economy.

Other reports have clearly documented the economic damages from climate change. The science has improved tremendously over the past decade, to the point where we can [clearly link](#) severe weather events like hurricanes, wildfires, floods, and drought to a warming planet. One recent

² Commodity Futures Trading Commission (CFTC), *Managing Climate Risk in the U.S. Financial System*, Report of the Climate-Related Market Risk Subcommittee of the Market Risk Advisory Committee (2020), <https://perma.cc/UT9M-FG2Y>.

study calculated \$1.75 trillion in damages from severe weather events since the 1980s.³ The National Oceanic and Atmospheric Administration (NOAA) estimates that the United States has already experienced over \$500 billion in direct economic costs from extreme weather events since 2015.⁴ Climate change is driving more frequent and damaging extreme weather events; 22 high-cost events were recorded in this past year alone, with each causing over \$1 billion in direct economic damage.⁵

Peer-reviewed economic research suggests that by the end of the century, total economic damages to the United States from climate change could amount to roughly 1 percent of U.S. GDP annually for each 1 degree Celsius of global mean temperature rise.⁶ Given expected economic growth rates, that amounts to a few trillion dollars *per year* in damages by the end of the century in real terms. Those damages would be felt across the economy – reducing crop yields in agriculture, threatening infrastructure, damaging coastal real estate, reducing labor productivity, and increasing heat-related mortality.

But even very large economic damages do not necessarily translate into risk to financial institutions. One of the main contributions of the CFTC report is to explore the potential financial risks in detail.

2.2 Pathways for climate-related risk to financial institutions

At the macro – or “systemic” – level, the report discusses how climate impacts could conceivably contribute to a financial crisis by propagating throughout the economy and undermining the value of financial assets, as previously hidden risks are suddenly taken into account.

The report also highlights the possibility that climate-related risks may well produce “sub-systemic” shocks, defined as those that affect financial markets or institutions, or a particular sector, asset class or region, but without threatening the stability of the financial system as a whole. For example, climate-related extreme weather events could pose a risk to financial market operations, via liquidity disruptions (as could occur in agricultural commodity futures markets, say, as a result of price volatility triggered by drought or other extreme weather events in major

³ Marcy Lowe & Rebecca Marx, *Climate Change-Fueled Weather Disasters: Costs to State and Local Economies* (Data Research, 2020), <https://perma.cc/N459-SDH4>.

⁴ Nat'l Oceanic & Atmospheric Admin., *Billion-Dollar Weather and Climate Disasters: Summary Stats*, <https://perma.cc/57XB-638E> (last visited Jan. 27, 2021).

⁵ *Id.*

⁶ Solomon Hsiang et al., *Estimating Economic Damage from Climate Change in the United States*, *Science* 365:1362 (2017), <https://perma.cc/UN9D-PRYS>.

agricultural states) or by threatening the operation of financial market utilities (the flooding of a vault of the Depository Trust and Clearing Corporation (DTCC) during Superstorm Sandy provides a cautionary tale).⁷

Financial institutions that hold assets likely to be particularly vulnerable to climate change could also be at risk – especially where the impacts of climate change are relatively concentrated. The report highlights examples of risks to various types of financial institutions or asset classes:

- **Banks with international loan portfolios in climate-vulnerable regions.**⁸ A scenario analysis conducted by 10 major international banks found that water stress resulting from climate-induced drought could lead to increased loan default losses or credit downgrades for bank portfolios.⁹
- **Regional and community banks in coastal areas and other climate-vulnerable regions.**¹⁰ Regional and community banks held 30 percent of commercial real estate loans in 2019.¹¹ These loans tend to be geographically concentrated and make up nearly a third of the loan books of small banks (Figure 1). As a result, climate-related disasters that affect commercial real estate in a particular region – such as a severe hurricane season – can have a disproportionate impact on local financial institutions.
- **Agricultural banks.**¹² Nearly half of all agricultural loans are held by lenders with at least one-quarter of their portfolio concentrated in farm-related areas, such as operating loans or real estate loans (Figure 2). Many of these lenders also have correlated risks because of loan concentrations in particular geographies or related agricultural businesses. Following severe flooding in the spring of 2019, for example, lenders in the Midwest reported to the Federal Reserve Bank of Chicago that 70% of their borrowers were moderately or severely affected by extreme weather events. That year, the portion of the region’s agricultural loan portfolio reported as having “major” or “severe” repayment problems hit the highest level in 20 years. Such occurrences are likely to become more frequent and severe as climate impacts continue to grow. A credit-stressed agricultural lending system would decrease farmers’ access to affordable credit and increase the difficulty in recovering from climate-related shocks.

⁷ CFTC, *Managing Climate Risk in the U.S. Financial System*, 30.

⁸ CFTC, *Managing Climate Risk in the U.S. Financial System*, 33.

⁹ Laurence Carter & Stephen Moss, *Drought Stress Testing: Making Financial Institutions More Resilient to Environmental Risks* (U.N. Environment Programme Financial Initiative, 2017), <https://perma.cc/3BRF-CDPV>.

¹⁰ CFTC, *Managing Climate Risk in the U.S. Financial System*, 33.

¹¹ Federal Deposit Insurance Corporation, *2019 Risk Review* (Washington, D.C.: Federal Deposit Insurance Corporation, 2019). <https://www.fdic.gov/bank/analytical/risk-review/full.pdf>.

¹² CFTC, *Managing Climate Risk in the U.S. Financial System*, 35.

Figure 1: Regional exposure to commercial real estate lending. *Source: CFTC, Managing Climate Risk in the U.S. Financial System, Figure 3.3.*

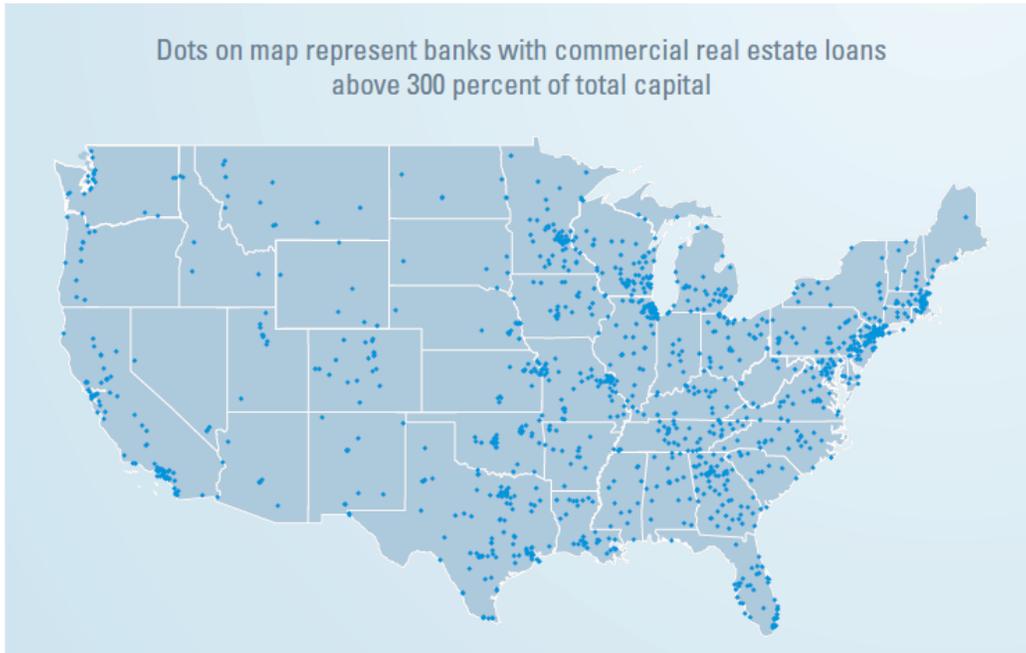
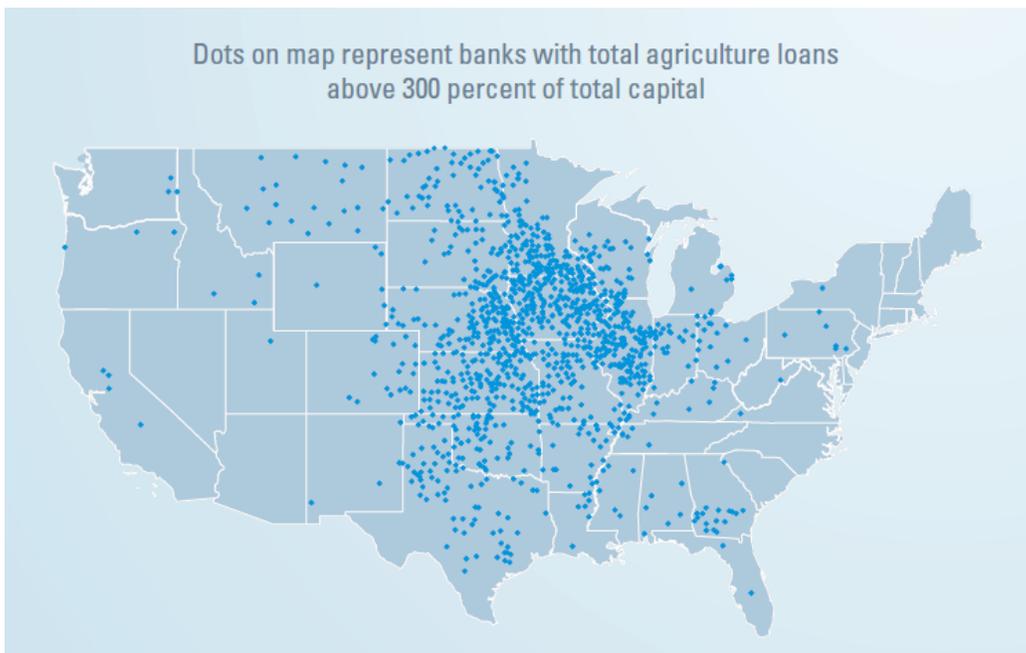


Figure 2: Regional exposure to agricultural lending. *Source: CFTC, Managing Climate Risk in the U.S. Financial System, Figure 3.4.*



- Municipal bonds.**¹³ Municipal bonds, used to help finance local governments and held by a wide variety of mutual funds, banks, insurance companies, households, and non-profit organizations, could also be at risk in climate-vulnerable regions. An analysis by BlackRock estimated that in roughly the next decade, municipalities issuing more than 15 percent of the S&P National Municipal Bond Index could face climate-related GDP losses of 0.5 to 1 percent annually – with that figure rising to 40 percent of municipalities suffering losses of 3 percent or more by the end of the century.¹⁴ These impacts could have significant implications for the ability of municipalities to service their obligations – raising the financial risk to bondholders.

Table 1: Categories of assets exposed to climate change impacts. *Source: CFTC, Managing Climate Risk in the U.S. Financial System, Table 3.1.*

Categories	Examples
Financial assets directly tied to real property	<ul style="list-style-type: none"> Commercial mortgage-backed securities (CMBS) Commercial real estate (CRE) bank loans Government-sponsored enterprise (GSE) Credit Risk Transfer securities Real Estate Investment Trusts (REITs) Residential mortgage-backed securities (RMBS) Residential mortgages
Financial assets tied to infrastructure	<ul style="list-style-type: none"> Debt and equities of power and water utilities and communications companies Debt and equities of public and private transportation infrastructure
Financial assets tied to companies with businesses models or operations likely to be impacted by physical or transition risk	Equities and debt of firms in the following sectors: <ul style="list-style-type: none"> Agriculture Airlines and the broader transportation sector Automobiles Cement, steel, chemicals, plastics Energy, including coal, oil, and gas production Hospitality Metals and mining Power generation Service and infrastructure providers to oil and gas Tourism
Financial assets tied to insurance coverage providers	<ul style="list-style-type: none"> Insurance and reinsurance company debt and equities Insurance linked securities (ILS)
Financial assets tied to streams of government revenue	<ul style="list-style-type: none"> Municipal bonds Sovereign bonds

¹³ CFTC, *Managing Climate Risk in the U.S. Financial System*, 36.

¹⁴ Ashley Schulten et al., *Getting Physical: Scenario Analysis for Assessing Climate-Related Risks* (BlackRock Investment Institute, 2019), <https://perma.cc/3J5C-7DK6>.

Table 1 on the previous page, taken from the CFTC report, presents a comprehensive list of assets exposed to climate change. It reveals the breadth of climate risk, including assets like mortgage-backed securities, real estate investment trusts (REITs), utility debt, insurance equities, and bonds; and sectors including agriculture, airlines, automobile manufacturers, hospitality, power generation, and concrete and steel.

Who bears these risks? Some risk is borne by regular investors – those without the information, analytical resources, or access to proprietary data to allow them to identify and respond to hidden risks from climate change. Some risk is borne by the regional financial institutions and the people who depend on them: small businesses with commercial real estate mortgages, farmers needing loans from agricultural credit institutions, and so on. In other words, this isn't just about big banks on Wall Street; this is about everyday transactions on Main Street: the home mortgages, commercial real estate loans, farm credit, and small business loans that underpin the U.S. economy – and that depend on a stable financial system.

How likely are those risks? The scary answer is: We don't know. The report shows a range of scenarios for how climate change could threaten the U.S. financial system, but we don't know when or how those scenarios could occur – because we are not requiring businesses and financial institutions to assess, measure, manage, and disclose those risks. Recent research from the Brookings Institution, aptly titled “[Flying Blind](#),” makes the same point: investors don't know the actual climate risks to their portfolios.¹⁵ Members of the financial community who ignore climate change – whether they are banks, investors or regulators – do so at their own peril.

That's precisely why measuring and managing climate risk should be an *essential part* of the actions regulators take to protect the financial system. I now turn to the role of regulators.

¹⁵ Parker Bolstad et al., *Flying Blind: What do Investors Really Know About Climate Change Risks in the U.S. Equity and Municipal Debt Markets?* (Brookings Institute, 2020), <https://perma.cc/8LNV-BEGK>

3. THE DUTIES AND AUTHORITIES OF FINANCIAL REGULATORS TO RESPOND TO THE RISKS OF CLIMATE CHANGE

3.1 Climate change and the foundational duties and authorities of financial regulators

Effective financial regulation relies upon multiple and overlapping federal and state regulatory regimes and regulators, each working to achieve a diversity of statutory goals and objectives. Those duties and obligations vary, but generally require agencies to ensure “market efficiency and integrity, consumer and investor protections, capital formation or access to credit, taxpayer protection, illicit activity prevention, and financial stability.”¹⁶ These broad statutory obligations require financial regulators to ensure a variety of safeguards are present. Transparent and fairly enforced market rules support market integrity. Reducing information asymmetries, ensuring accurate and comprehensive information, and requiring robust disclosure improves efficiency. Preventing losses to the American taxpayer is likewise of crucial importance. And financial stability, considered in the context of systemic risk and synergistic events, is core to regulatory responsibility.

Climate change is highly relevant to the various statutory obligations for financial regulators identified above: market efficiency and integrity can only be maintained when market participants are aware of climate risks to regulated entities and investments; taxpayer losses can only be prevented when the effects of climate change are considered; and financial stability can only be maintained when systemic risks like climate change are proactively addressed. More generally, risk identification, reduction, and allocation guide regulatory oversight and should extend to consideration of climate impacts. For these reasons, financial regulators should take proactive action to consider how the consequences of climate change implicate their statutory duties and authorities.

The consequences of climate change increasingly implicate these and other statutory duties of financial regulators. Put simply: Asserting that financial regulators have an obligation to regulate climate risk is not based on a reinterpretation of the duties of those regulators. Those duties remain the same. What is “new” is the magnitude of the risk posed by climate change.

¹⁶ Marc Labonte, *Who Regulates Whom? An Overview of the U.S. Financial Regulatory Framework* (Congressional Research Service, 2020), <https://perma.cc/NXT4-V3RU>, ii.

3.2 The need for mandatory disclosure of climate-related financial risk

As described above, financial regulators have long required requisite levels of transparency and accountability from regulated entities. Safeguards to ensure accurate and comprehensive information are necessary to the U.S. economy and convey critical benefits across stakeholders. Duties and authorities under federal securities law serves as one pressing example, with the SEC statutorily obligated to protect investors, facilitate capital formation, and maintain fair, orderly, and efficient markets.¹⁷

To discharge these core duties, the SEC requires, among other things, that regulated entities disclose material risks. As demonstrated in section 2, climate change increasingly poses a material risk to a broad swath of the economy. The consequences of climate change are already creating significant and foreseeable financial harms, and disclosure is necessary to ensure investors are aware of the physical and transition risks that corporations they invest in may face, as well as the potential implications of that exposure.

Although climate related financial risks are growing, current disclosure regimes in the United States have not kept pace. SEC guidance in 2010 was important and pathbreaking but has proven insufficient, with resulting disclosures lacking in specificity, submitted with boilerplate language, or missing entirely.¹⁸ In the absence of effective regulation, voluntary standards and frameworks have emerged. Although these efforts, including those by the Task Force on Climate-related Financial Disclosures (TCFD) and the Sustainability Accounting Standards Board (SASB) have been critical to advancing climate risk disclosure, they are insufficient. Recent study has found that although climate risk disclosure has increased, “[m]ore firms are disclosing more general information that is essentially of no utility to the marketplace.”¹⁹ In addition, disclosure varies across sectors and some sectors that are particularly vulnerable to climate impacts, such as agriculture, are lagging in their assessment and disclosure of climate risks.²⁰

To address this vulnerability, the SEC should take action to strengthen mandatory climate risk disclosure. Doing so furthers the Commission’s statutory duties and provides benefit not only to

¹⁷ National Securities Markets Improvement Act of 1996, Pub. L. No. 104-290, 110 Stat. 3425 (adding 15 U.S.C. § 77b(b) to the Securities Act of 1933 and 15 U.S.C. § 78c(f) to the Securities and Exchange Act of 1934).

¹⁸ Sustainability Accounting Standards Board, *The State of Disclosure 2017: An Analysis of the Effectiveness of Sustainability Disclosure in SEC Filings* (2017), <https://perma.cc/USC8-2HN2>. P. 2.

¹⁹ Parker Bolstad et al., *Flying Blind*, 3.

²⁰ Agricultural lenders cite their largest risks as commodity prices, production costs, farmland values and global market issues. U.S. Bd. of Governors of the Fed. Reserv. Sys., Div. of Banking Supervision and Regul., SR 11-14: Supervisory Expectations for Risk Management of Agricultural Credit Risk (2011), <https://perma.cc/LT4G-2D6T>.

investors, but to regulatory companies, the market, and the American public. First, investors benefit generally when risks are disclosed, insofar as “investors can only price the risks that they are aware of,” and understanding climate risk exposure “requires more granular data than is currently disclosed in financial reporting.”²¹ Useful climate risk information thus serves an investor’s interest in effectively allocating capital on the basis of a robust understanding of reward and risk. Second, companies benefit in at least three ways: “the improved ability: (i) to identify, assess, manage, and adapt to the effects of climate change on operations, supply chains and customer demand; (ii) to relay risk and opportunity information to capital providers, investors, derivatives customers and counterparties, markets, and regulators; and, (iii) to learn from competitors about climate-related strategy and risk management best practices.”²²

Third, strengthened climate risk disclosure benefits markets themselves, and climate risk disclosure is relevant to facilitating capital formation and maintaining fair, orderly, and efficient markets. As noted above, prices that incorporate all information about a corporation’s financial prospects improve investors’ ability to distribute capital to its highest value use. Without sufficient disclosure, widespread mispricing can occur, an outcome that puts market structures at risk, where in the absence of accessible and accurate information the likelihood of a sudden shift in price correction may occur. Financial experts have warned that consequent “sharp changes in valuations” of corporate entities could in turn lead to cascading instability across the financial sector.²³

Fourth, climate risk disclosure also conveys crucial benefit to the American public: transparent disclosure of climate risk and incorporation of that information supports public planning; better understanding of physical climate risk and thoughtful resilience planning can reduce damage; and strengthened climate risk disclosure has the potential to support mitigation efforts.²⁴

For these reasons, the consequences of climate change should be brought level with other forms of financial risk and mandatory disclosure rules strengthened. Boilerplate filings are not

²¹ Madison Condon, *Market Myopia’s Climate Bubble* 2021 Utah L. Rev. (forthcoming 2021) (manuscript at 6-7), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3782675.

²² CFTC, *Managing Climate Risk in the U.S. Financial System*, 87.

²³ Mark Carney, Gov., Bank of England, Chair, Fin. Stability Bd., *Resolving the Climate Paradox*, Arthur Burns Memorial Lecture (Sept. 22, 2016), <https://perma.cc/6GPS-VWVU>.

²⁴ Benedikt Downar, Jürgen Ernstberger, Stefan Reichelstein, Sebastian Schwenen & Aleksandar Zaklan, *The Impact of Carbon Disclosure Mandates on Emissions and Financial Operating Performance*, (Stanford Steyer-Taylor Center for Energy Policy and Finance, 2020), <https://law.stanford.edu/publications/the-impact-of-carbon-disclosure-mandates-on-emissions-and-financial-operating-performance/>.

adequate, and disclosure should drive comparable, specific, and decision-useful information from regulated entities. These three tentpoles of strengthened disclosure necessarily overlap, but each conveys particular meaning: comparability enables benchmarking and risk relational across companies; specificity encourages granular analysis particular to that entity; and decision-useful design, meant to broadly contemplate not only investment determinations but also, for example, ownership, engagement, and proxy voting-related decisions, is crucial.²⁵

The SEC has recently taken positive and important steps to consider where and how climate change implicates its statutory duties and obligations, including focusing staff attention on the subject and requesting public input on climate risk disclosure.²⁶ These efforts should lead to mandatory comparable, specific, and decision-useful climate risk disclosure.

3.3 Additional recommendations for incorporating climate risk into financial regulation

As described above, climate change implicates multiple financial regulators and a variety of statutory obligations and duties. In this context, a few additional examples of specific agencies actions are identified below. These actions are described here to highlight the varying ways in which climate change interacts with regulatory responsibility and identify a few potential priorities, without representing an exclusive list.

Add climate risk expertise

First, the Treasury Department and the Financial Stability Oversight Council (FSOC) should act swiftly to add climate risk expertise. The consequences of climate change as a systemic risk could be explicated through these bodies, and FSOC may additionally serve as an entity well-suited to convene an interagency working group to consider climate scenario analyses. Such action would have precedent: FSOC has previously created interagency working groups to better understand potential risks of specific activities and actions to financial stability.²⁷

Likewise, the Federal Reserve should continue efforts to improve its internal expertise on climate risk. In its 2020 Financial Stability Report, the Federal Reserve classified climate change as a

²⁵ Madison Condon et al., *Mandating Disclosure of Climate-Related Financial Risk* (NYU Institute for Policy Integrity and Environmental Defense Fund, 2021), <https://perma.cc/2USW-MMXF>, p. 11.

²⁶ Acting Chair Allison Herren Lee, *Public Input Welcomed on Climate Change Disclosures*, U.S. Securities and Exchange Comm'n (Mar. 15, 2021), <https://perma.cc/U9VA-RZW3>.

²⁷ Press Release, Dep't of Treasury, Financial Stability Oversight Council Releases Statement on Review of Asset Management Products and Activities (Apr. 18, 2016), <https://perma.cc/M9T9-M9J5>.

“near-term risk to the financial system that will likely increase financial shocks and financial system vulnerabilities.”²⁸ Similarly, the Fed has recently stated that “Federal Reserve supervisors are responsible for ensuring that supervised institutions operate in a safe and sound manner and can continue to provide financial services to their customers in the face of all types of risks, including those related to climate change.”²⁹

Require bank and nonbank financial firms to incorporate climate risk more broadly

Under its supervisory authority, the Federal Reserve should require financial institutions to incorporate consideration of climate-related financial risk into existing risk management and governance frameworks. As recommended in the CFTC report, the Fed should also begin to explore incorporating climate risk into stress testing, for example through a pilot climate risk stress testing program in conjunction with financial institutions – following the lead of other jurisdictions such as the U.K., and drawing on the work of the Central Bank and Supervisors Network for Greening the Financial System (NGFS).³⁰

Promote broader availability and consistency of climate data

To inform these stress tests and help ensure consistency in reporting, regulators should work with a range of stakeholders to support the widespread public availability of consistent, comparable, and reliable climate data and analysis, including via open source platforms, and to develop standardized, consistent, broadly applicable climate scenarios.³¹

4. OPPORTUNITIES FOR MOVING PRIVATE CAPITAL TO ADDRESS CLIMATE CHANGE

4.1 The role of the private sector in promoting climate-friendly and sustainable investment

Over the past five years, private capital has increasingly flowed towards climate-friendly assets, as part of a broader shift to take environmental, social, and governance (ESG) factors into account in investing. Between 2016 and 2018, ESG investing (often referred to as “sustainable” investing) in the US grew by more than 38%.³² Sustainable investments now account for approximately one third of all assets under professional management in the US, totaling \$17.1 trillion as of November

²⁸ <https://www.federalreserve.gov/publications/2020-november-financial-stability-report-near-term-risks.htm>

²⁹ “Supervision and Regulation Report,” Board of Governors of the Federal Reserve System, November 2020, <https://www.federalreserve.gov/publications/files/202011-supervision-and-regulation-report.pdf>.

³⁰ CFTC, *Managing Climate Risk in the U.S. Financial System*, 44-5 and 51-52.

³¹ See discussion of data needs and scenario analysis in CFTC, *Managing Climate Risk in the U.S. Financial System*, Chapters 5 and 6.

³² US SIF, Sustainable Investing Basics, <https://perma.cc/2E9F-PTEN>.

2020.³³ These trends are driven in large part by increasing demand: 85% of investors across all age groups express interest in sustainable investing. This number rises for younger populations: 95% of millennials have a stated interest in sustainable investing and 89% actively expect their financial advisors to assess a company's ESG profile before making an investment recommendation.³⁴

Much of the rising demand in ESG and sustainable investing is driven by a particular focus on climate change, motivated by an interest in helping to combat the physical and transition risks presented by climate change as well as the opportunities to generate value from low-carbon and climate-friendly investment. The Climate Action 100+ initiative, designed to support transition to net-zero business strategies, continues to grow, with nearly 550 investors and \$52 trillion in assets under member management.³⁵ These trends highlight the immense momentum driving private capital towards climate solutions.

Asset managers and banks also understand that climate change poses short-, medium-, and long-term financial risks. As BlackRock CEO Larry Fink succinctly wrote in 2020, "climate risk is investment risk."³⁶ BlackRock is not alone; investors increasingly allocate private capital to climate-friendly assets to minimize risk and maximize returns.³⁷ Indeed, these same underlying forces have prompted leading financial institutions to commit to achieving net zero finance emissions by 2050. JP Morgan, Morgan Stanley, Goldman Sachs, and Citigroup among others have all pledged to slash their financed emissions over the coming decades. These commitments portend even more climate-aligned capital allocation in the future. However, more action is needed.

Banks and asset managers can begin reducing financed emissions in the immediate term by engaging with companies in carbon-intensive sectors such as oil and gas and transportation. In oil and gas, firms can monitor, for example, methane emissions, flaring intensity, capital expenditures, lobbying, and governance to track progress and allocate investment to those that perform well. By establishing time-bound climate benchmarks with consequences for high impact

³³ US SIF, *The US SIF Foundation's Biennial "Trends Report" Finds that Sustainable Investing Assets Reach \$17.1 Trillion* (Nov. 16, 2020, 3:24 PM), <https://perma.cc/DM2C-YBCX>.

³⁴ MSCI, *Swipe to Invest: The Story Behind Millennials and ESG Investing 7* (2020), <https://perma.cc/ZSQ6-PQ6N>.

³⁵ Climate Action 100+, "Ceres," <https://www.ceres.org/initiatives/climate-action-100>.

³⁶ Larry Fink, *Larry Fink's 2020 Letter to CEOs: A Fundamental Reshaping of Finance*, BlackRock (Jan. 14, 2020), <https://perma.cc/8TA7-VGUM>.

³⁷ Jon Hale, Morningstar, *Sustainable Funds U.S. Landscape Report: More Funds, More Flows, and Impressive Returns in 2020* (2021), <https://perma.cc/9SFJ-7NE5>.

sectors, investors can accelerate the deployment of private capital to climate solutions.³⁸ Banks and asset managers should also direct financing towards activities that simultaneously reduce greenhouse gas emissions and build the underlying asset's climate resilience. For example, private investments in climate-resilient agricultural production can reduce agriculture's greenhouse gas emissions while reducing production risks from severe weather impacts.³⁹

4.2 The role of government policies in channeling private capital into climate solutions

Carbon pricing

The most important step that government could take to help channel private capital into low-carbon investment is to implement policies that put a fair and effective price on carbon emissions. Every ton of carbon dioxide and other greenhouse gases imposes a cost on society as a whole. Using the U.S. government's current central estimate of the social cost of carbon – the estimate economic damages from a ton of carbon dioxide emitted today, calculated into the future and discounted back to today – is \$51 per ton.⁴⁰ Given total U.S. CO₂ emissions of more than 5 billion tons, that implies an annual cost on the order of a quarter of a trillion dollars per year. Moreover, there are strong reasons to think that the current estimate of the social cost of carbon is too low.⁴¹ In the absence of effective government policies, however, that cost is not reflected in market prices – and therefore is missing from the financial returns to investors.

As a result, without a price on carbon, private markets will fail to direct capital efficiently. In the words of the CFTC report:

Without an effective price on carbon, financial markets lack the most efficient incentive mechanism to price climate risks. Therefore, all manner of financial instruments—stocks, bonds, futures, bank loans—do not incorporate those risks in their price. Risk that is not

³⁸ Ben Ratner & Erin Blanton, *Five Key Climate Metrics for the Oil and Gas Sector's Next Five Years*, World Economic Forum (Nov. 2, 2020), <https://perma.cc/U3RL-KMXF>.

³⁹ Maggie Monast, *Financing Resilient Agriculture: How Agricultural Lenders Can Reduce Climate Risk and Help Farmers Build Resilience* (Environmental Defense Fund, 2020), <https://perma.cc/BF4G-A55W>.

⁴⁰ United States Government Interagency Working Group on Social Cost of Greenhouse Gases, *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990* (February 2021), https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf

⁴¹ K.D. Daniel, R. B. Litterman, and G. Wagner, Declining CO₂ price paths, *Proceedings of the National Academy of Sciences* 116(42) (2019), 20886-20891; R. L. Revesz, P. H. Howard, K. Arrow, L. H. Goulder, R. E. Kopp, M. Livermore and T. Sterner, Global warming: Improve economic models of climate change, *Nature*, 508(7495) (2014), 173.

quantified is difficult to manage effectively. Instead, it can build up and eventually cause a disorderly adjustment of prices.⁴²

For this reason, the CFTC report recommends 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.⁴³

Supporting climate-focused and sustainable investing

While interest in ESG and sustainable investing is increasing, the data underlying ESG products remains inconsistent in terms of quality and availability. ESG investing remains relatively opaque, with no shared industry definition on “sustainability.” As a result, ESG-branded products can contain companies that perform poorly on climate, and comparability between ESG rating systems is difficult to achieve.⁴⁴ More generally, investors face difficulties engaging companies on decarbonization strategies when they lack relevant climate information. Strengthened mandatory disclosure by the SEC, as described above, could help address these issues, driving more private capital to climate-friendly assets.

Government policies should also acknowledge the relevance of ESG factors, including climate-related factors, to investors and allow them to be better integrated into retirement planning. Demand for sustainable retirement funds is high; 74% of employees feel that having socially responsible investment options in their 401(k) plans is important. Roughly 2/3rds of all millennials would increase their retirement plan contribution if they knew their investments were doing social good. Retirement plans are a significant vehicle for individual investors to realize their goals: while only 14% of Americans are directly invested in individual stocks, over half have

⁴² CFTC, *Managing Climate Risk in the U.S. Financial System*, 4.

⁴³ CFTC, *Managing Climate Risk in the U.S. Financial System*, 9.

⁴⁴ Dane Christensen et al., *Why is Corporate Virtue in the Eye of the Beholder? The Case of ESG Ratings*, 96 *The Acct. Rev.* (forthcoming 2021), <https://perma.cc/Q8X3-5QUV>.

access to 401(k) plans.⁴⁵ Yet despite clear interest in sustainable investment, less than 3% of 401(k) plans include an ESG option and only .1% of 401(k) assets are ESG-aligned.⁴⁶

Promoting better integration of ESG and climate-focused factors in the \$6.6 trillion 401(k) market would provide millions of Americans with access to funds that generate superior long-term returns, align with their values, and protect the planet. The Department of Labor (DOL), under the Employee Retirement Income Security Act (ERISA), oversees minimum standards for retirement plans in the United States, and should consider rulemaking and/or other actions that could support climate-aligned investment by better integrating ESG and sustainability factors in ERISA plans. In particular, DOL should consider formally acknowledging existing evidence that climate-related risks are financially material, in order to clarify existing regulations for plan fiduciaries and reduce uncertainty that can hinder the inclusion of climate-relevant factors into plan offerings.

5. CONCLUSION

Climate change poses significant risks to the U.S. financial system – but well-designed policies can help to manage and mitigate those risks. As policy makers consider how to address the challenge of climate change and position the U.S. economy for robust, inclusive growth in coming decades, they have a range of tools available. Given the central importance of accurate, consistent, and up-to-date information, regulators should put particular importance on mandatory climate risk disclosure, as well as incorporating climate risk into risk management practices of regulated firms, increasing the relevant expertise of regulators, and improving data availability. In addition, well-designed policies can help remove barriers that limit the flow of private capital into low-carbon and climate-friendly investment opportunities, responding to the significant and growing demand from investors. In that respect, the most important step policy makers can take would be to implement a fair and effective price on carbon across the U.S. economy.

⁴⁵ <https://www.pewresearch.org/fact-tank/2020/03/25/more-than-half-of-u-s-households-have-some-investment-in-the-stock-market/>

⁴⁶ Greg Iacurci, *Climate Funds Hold Less Than 1% of 401(k) Money. Here's Why*, CNBC (Dec. 14, 2020), <https://perma.cc/D892-JMEN>.