



# Going Green: The Future of U.S. Climate-Risk Financial Policy

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**October 26, 2020**

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- Reducing financial risk resulting from climate change poses unique analytical challenges. Unlike climate risk (generally matrices of multiple, interacting effects often resulting from a single cause), financial risks are siloed, albeit with network effects.
- Policy-makers and politicians are racing to mandate global and U.S. climate financial-risk mitigation with scant regard for this critical structural difference, which often makes tested financial-risk mitigation solutions inappropriate and even wrong-headed for climate-risk mitigation in the financial sector.
- It is for this reason that climate-risk stress-testing cannot be modelled on credit-risk tests nor is the risk-based capital framework well designed for climate-risk mitigation. Qualitative risk-mitigation standards ensuring appropriate governance, operational resilience, and capital buffers are likely to prove more effective climate-risk mitigants in the near term.

Regardless of the 2020 election's outcome, the scope of U.S. climate destruction in just the last month ensures high-priority political and policy attention. Even climate-change skeptics have come to realize that climate risk – whether due to undue greenhouse gas emission or just a string of very bad luck – poses

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\* This issues brief reflects only Federal Financial Analytics (FedFin) research, policy-maker discussions, and analysis. Views and forecasts in this report were not commissioned or funded by any third-party private or public-sector entity.

institutional, sectoral, and even systemic risk. As a result, work already under way at several U.S. financial regulators will advance in 2021 even if a new Administration or Congress does not demand even more stringent standards.\*\*

This report identifies challenges to effective climate financial-risk mitigation due to the differences between the physical and transition risks posed by climate change and the financial risks for which traditional financial rules are designed. We conclude with a set of decision points we think require urgent attention if new standards are to have their desired climate-risk reduction effect without undue market, social-welfare, or profitability impact. We also forecast other near-term financial initiatives aimed at climate-risk mitigation, noting key policy considerations.

## Climate versus Financial Risk Structural Considerations

To date, most analyses of financial risks describe not the structure of climate risk in the financial system, but focus instead on sizing the scale of macroeconomic exposures and the ways in which these risks may affect different financial-industry models, not institutions. Literature surveys combined with policy recommendations such as those recently released by the Bank for International Settlements<sup>1</sup> and a subcommittee of the Commodity Futures Trading Commission<sup>2</sup> are important advances, but each aims to garner support for action by financial regulators. They are urgent calls to policy action, but not always guides also to specific regulatory or supervisory actions that reflect the differences between the climate risks they catalogue and the multifaceted financial risks that often result.

**FINANCIAL RISK:** Generally, initially attributable to one cause – i.e., a problem asset – that is effectively mitigated by one solution – i.e., sufficient regulatory capital.

In brief, policy-makers after the 2007-09 great financial crisis (GFC-1) retooled prior risk-mitigation standards and invented a few new ones to prevent and reduce the risks believed to have caused such widespread financial and macroeconomic destruction. Because of the way the GFC-1 evidenced itself, much of these standards addressed traditionally-understood risks in silos – capital standards, for example – aimed at one or another risk – e.g., the credit risk caused by subprime mortgages. Network effects were to some degree anticipated, but this was done largely by modelling contagion risk – i.e., cases in which credit risk is so acute that liquidity dries up, one weak bank brings down stronger banks or a central counterparty's problems create a cascade of downstream losses. Because credit and liquidity-risk buffers are now so strong, each stand-alone risk mitigant is expected to prevent one adverse scenario from triggering a cascade of downstream losses. Because risks are seen to be and often are siloed, one tough rule – e.g., a credit risk-based capital standard and surcharges built upon it – is expected to ensure solvency that then prevents second-order liquidity and other risks because network effects are interrupted by strong capital or, in extremes, by central-bank intervention.

**CLIMATE RISK:** Rarely attributable to a single cause and often experienced multi-dimensionally. Risk mitigation may be effective in one dimension – i.e., via a flood wall that protects some endangered property – but prove powerless to address ancillary risk (downstream flooding, nuclear-plant disaster, wind damage) as well as second-order macroeconomic events that then generate financial risk across varying dimensions (credit, liquidity, payment systems, etc.)

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\*\* FedFin takes no stand on the causes of climate risk as we are not qualified to do so – and focus here on the regulatory tools being readied as climate-risk mitigators.

In sharp contrast, climate risk generally manifests itself as a matrix – not a silo or even a network. That is, very few floods do no more than get a few things wet; instead, they are accompanied by wind damage along with damages to infrastructure, health risk, unemployment, scuttled businesses, and submerged economic growth. Mapping only what gets wet – analogous to predicting which mortgages may default – fails to capture climate risk in the financial context because climate risk is often experienced across a matrix of credit, operational, cyclical, and market events.

Climate-risk matrices are most obvious in natural disasters – think of a flood – a massive one creates direct risk to financial institutions due to physical damage whilst borrowers face similar infrastructure loss and cease to be able to honor their debt even as financial markets in the same region cease functioning due to operational damage and payment-system counterparty default due to operational, credit, liquidity, or trading risk.

Transition risk related to climate change – i.e., the costs associated with moving to a green future or preparing for disasters – is often less complex and may sometimes be modelled much as a siloed financial risk. For example, changing public policy and/or market sentiment may create simultaneous risks across a region dependent on an energy source (e.g., coal). The cost to one or another company due to lost revenues that then leads to credit risk resulting from climate transitions is structurally akin to that experienced when a company makes any product against which policy-makers or consumers choose to turn. However, transition risk also has matrix effects akin to those in financial crises because one troubled company on which a region depends may well create acute macroeconomic risk across a region as well as posing financial risk to more than one creditor.

“Wrong-way” risk also occurs in climate risk to a greater extent than in financial risk because mitigation – i.e., insurance, redundant infrastructure – may be adversely affected at the same time due to correlated risk or poor institutional governance. Political risk is also critical because the extent to which policy addresses risk (i.e., through pre-risk mitigation or post-risk relief) directly affects both immediate risk exposures and resulting legal and reputational risk. This form of risk mitigation is akin in some respects to central-bank intervention as a buffer of financial risk, but perhaps even less predictable.

## **Climate-Risk Square Pegs, Financial Risk-Mitigation Round Holes**

Because of these structural differences, regulatory tools such as risk-siloed capital charges and stress tests are ill-suited to climate risk. It remains to be seen how financial-risk mitigation requirements change in the wake of GFC-2, but all considerations to date appear focused on revising existing tools (e.g., capital standards), not developing new tools suitable for climate-risk matrices.

Because of climate risk’s multi-dimensional, matrix construct, risk mitigation is most effective when targeted directly at climate risk. Such macro-solutions are increasingly adopted by many individuals and businesses seeking to reduce their “carbon footprint” and by localities, nations, and regions seeking similarly to reduce GHG by statutory and regulatory interventions such as carbon taxes. However, it is clear that these risk mitigants will take many years to implement and that, even when fully in place, severe climate-risk incidents may occur. As a result, risk mitigants aimed specifically at financial institutions are under active consideration around the world and in the U.S.

In this section of our brief, we consider several financial-regulatory tools aimed at climate risk to assess the extent to which they are likely to prove successful against the structural challenges posed by climate risk, in forecasting near-term action, and in identifying potential costs and benefits.

### ***Stress Testing***

Stress testing is the most immediate action item on many U.S. regulators’ agenda in part because Congressional Democrats ask about it at almost every hearing and several bills have been introduced to

mandate it.<sup>3</sup> The Central Bank and Supervisors Network for Greening the Financial System (NGFS) has also developed reference scenarios for stress testing,<sup>4</sup> even as the U.K.'s Prudential Regulatory Authority,<sup>5</sup> the Banque de France,<sup>6</sup> Australian regulators,<sup>7</sup> and the De Nederlandsche Bank<sup>8</sup> are in various stages of using these scenarios or their own to launch climate stress tests.

The CFTC report described above is among many urging regulators to begin stress testing, starting with pilot exercises. However, at the same time, it also notes many significant data uncertainties, thus recommending a new set of disclosures akin to those under construction by a subcommittee focused on climate change under the Financial Stability Board's aegis.<sup>9</sup> However, these disclosures are aimed at shareholder transparency to enhance market discipline, not to deter climate risk and/or resulting financial damage. They are thus neither uniform nor based on accepted climate-risk measurement standards such as GAAP that permit comparability among companies in terms of earnings impact, let alone in providing the basis for a comprehensive and forward-looking stress test. A recent FSB report reinforces these concerns,<sup>10</sup> with more work on climate-change analytics due later this year.

Pilots and benchmarking exercises for GHG impact and other physical and transition climate risks will clearly advance financial-risk analytics and thus enhance eventual stress tests. However, even well-developed stress testing for credit risk and, more recently, those related to the pandemic have inherent limitations and risks of their own. The most significant of these is the fact that supervisory stress tests are by definition set by a supervisor and therefore are premised on one set and based on models set by one agency which, for banks, would be a Federal Reserve far more skilled at financial than climate risk. Indeed, even with all this embedded financial-risk expertise, Fed stress-test models are hotly contested.<sup>11</sup>

Supervisory models also create significant correlation risk – that is, even if a test model is well designed and forward looking, it is just one model. If all large banks judge or are judged by this model, then unexpected shocks could be particularly devastating because few, if any, entities are prepared for it. Current stress tests attempt to compensate for this with capital surcharges and other “belts and suspenders,” but even this abundance of caution does not reduce correlation risk from a financial perspective.<sup>12</sup> It is still less likely to do so for climate risk for the structural reasons described above.

An additional structural impediment to deploying current stress-test methodology for climate risk is the remedy on which stress testing now counts: lots more capital and, in some cases, that along with more liquidity. Contingency planning for operational risk is better suited to climate risk, but methodology here has been developed only for each institution's own operations, not for those across a wide spectrum of customers, counterparties, and exposures. Traditional stress-test remedies – i.e., capital-distribution restrictions – are ill-suited to climate risk except with regard to the credit or, perhaps, also the operational risk resulting from individual borrower or sector transition risk. Even so, as noted, modelling and forecasting these risks remains at an early stage.

Operational risk-based capital is intended to address natural disasters,<sup>13</sup> but most U.S. banks are exempt from these requirements.<sup>14</sup> Further, emerging operational risk-based standards are largely retrospective, not forward-looking.<sup>15</sup> This makes them particularly ill-suited for climate risk. Bank regulatory-capital rules also mandate “Pillar 2” charges for a basket of risks that are complex to quantify in “Pillar 1”.<sup>16</sup> The extent to which these additional capital requirements suffice for the added risks associated with climate change also depends on reliable risk-benchmarking exercises that remain in their very early stages.

## Policy Response

Despite all these structural and analytical challenges, the political pressure facing the Fed and other financial regulators to do something about climate risk is already intense and will become still more so if Democrats take the White House and/or the Senate. We thus forecast an advance notice of proposed rulemaking (ANPR) from the Federal Reserve and, perhaps, other banking agencies in the fourth quarter or early next year. An ANPR has the advantage of demonstrating concern and gathering useful comment without committing the agencies to any action or even timeline.

The Securities and Exchange Commission will also come under heightened pressure with regard to stress-test disclosures that, while focused on investor protection, are nonetheless significant developments

affecting the pace of U.S. climate-risk testing in the financial sector. Because the SEC is more directly controlled as a result of the November election, its actions depend on its outcome. If Democrats take the White House, then the SEC will consider making the FSB climate-risk disclosures described above a mandatory disclosure for public registrants; if Democrats take only the Senate, legislation will advance and likely pass to force it to do so, but enactment under President Trump is wholly uncertain.

## ***Additional Climate-Change Actions***

Although stress-testing and securities disclosures are most advanced among the financial-risk reactions to climate risk, others are also under active consideration. We note several key developments and likely action as follows:

- ***Systemic Activity/Practice Standards:*** Climate risk rated no mention in the 2019 annual report from the Financial Stability Oversight Council.<sup>17</sup> This will surely change in the first year of a Biden Administration. We believe it will also act to use the activity-and-practice powers laid out by the Trump Administration,<sup>18</sup> even though these will be revised by a Biden Administration, to reinstate more rapid firm-specific systemic designation. These activity-and-practice standards remain limited under the Dodd-Frank Act,<sup>19</sup> but are nonetheless the only avenue for cross-sectoral creation of a new U.S. climate-risk control paradigm addressing financial risk. Even so, the FSOC cannot order primary federal financial regulators; it can only urge them to act. It has even less sway over state-regulated entities (e.g., those governing insurers).
- ***Monetary-Policy Recalibration:*** Both FRB Governor Brainard<sup>20</sup> and the president of the Federal Reserve Bank of San Francisco<sup>21</sup> have recently noted that climate risk has significant monetary-policy implications (e.g., suppressed output, lower neutral rates). The Bank of International Settlements went considerably farther, urging central banks to become “climate rescuers of last resort.”<sup>22</sup> Although the BIS also recommends that central banks hold green assets in portfolios used for foreign-exchange purposes, it does not endorse “green quantitative easing” – i.e., central-bank purchasing of corporate or other assets to support climate-risk mitigation or creating deeper green-bond markets. Doing so in the U.S. creates complex statutory challenges. However, now that the FRB has decided that it may legally purchase corporate obligations,<sup>23</sup> it is likely to come under considerable pressure next year to do so also to promote climate change. It has certainly taken withering criticism from Democrats over its willingness to buy bonds or otherwise support fossil-fuel companies.<sup>24</sup>
- ***Capital Requirements:*** The analytical challenges above for stress testing also complicate those seeking to use risk-based capital charges to penalize “brown” projects or companies. In the absence of express brown-penalty capital requirements – an idea the BIS readily acknowledges poses policy problems – the global central bank suggested express credit-allocation policies to contain brown exposures. However, as Acting Comptroller Brooks recently made clear,<sup>25</sup> even voluntary action by large banks to contain what they believe to be problematic climate risk is highly controversial. If Republicans retain control of the White House and/or Senate in 2021, federal agencies will come under strong pressure and perhaps even be barred by law from taking any of the BIS’s actions. If Democrats gain control, this might advance, but the U.S. has a general and nonpartisan dislike of credit-allocation policies. We thus doubt a Biden Administration official would issue direct edicts demanding certain purchases or divestitures.
- ***Government-Sponsored Enterprises (GSEs):*** Pending capital rules for Fannie Mae and Freddie Mac issued by the Federal Housing Finance Agency (FHFA) include an indirect buffer intended in part to capture climate risk.<sup>26</sup> We expect this to remain the case unless or until the banking agencies establish a green capital construct. However, the CFTC report raised concerns that the GSEs are at particular climate risk because of transfer of climate risk from mortgage originators to entities backed by an implicit taxpayer guarantee. Many structural issues confront FHFA now, and in a Biden Administration regarding the future of the GSEs’ conservatorships as well as managing COVID-created mortgage risks. However, we expect Fannie Mae, Freddie Mac, and the Federal Home Loan Banks to be deployed as agents of U.S. climate-risk policy in a Biden Administration and to a limited extent even under President Trump. This may involve specific limitations requiring use of renewable energy in homes and multi-family projects, directives to issue “green housing” bonds, new portfolio authority to hold “green” obligations, rules stipulating that green bonds are eligible collateral, and an array of other actions. We would expect the Federal Housing



Administration to join in such green-financing initiatives to the extent authorized by law and perhaps even go beyond what is demanded of the GSEs due to the agency's status as a direct arm of the U.S. Government.

- **Bank Supervision:** To date, FRB Chairman Powell and other U.S. regulators have assured Congress that ordinary bank-supervisory protocols generally suffice to capture climate risk.<sup>27</sup> However, a senior official at the Federal Reserve Bank of New York recently outlined specific supervisory actions he believes are warranted by climate risk.<sup>28</sup> Action here will depend as much on Federal Reserve Board thinking about politics as on policy, with the most likely response from the Fed as a whole likely to be a demand for new governance pending considerably more work by U.S. and global regulators. The Basel Committee has noted many of the same obstacles to effective financial-risk mitigation noted in this report,<sup>29</sup> and is now planning initial recommendations in mid-2021. U.S. action regardless of Administration will await global standards except to the extent (e.g., re stress testing) domestic political pressure trumps global caution.

## Conclusion

This is an issue brief and thus necessarily provides only high-level conclusions without analytical detail and forecasts without background information. It is thus a high-level summary based on Federal Financial Analytics' assessments, intelligence-gathering, and strategic conclusions. We welcome comments and inquiries, which may be directed to us at [info@fedfin.com](mailto:info@fedfin.com) or by calling 202-589-0880 and requesting to leave a message for Matthew Shaw.

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<sup>2</sup> Commodity Futures Trading Commission (CFTC), *Managing Climate Risk in the U.S. Financial System*, (September 9, 2020), available at <https://www.cftc.gov/sites/default/files/2020-09/9-9-20%20Report%20of%20the%20Subcommittee%20on%20Climate-Related%20Market%20Risk%20-%20Managing%20Climate%20Risk%20in%20the%20U.S.%20Financial%20System%20for%20posting.pdf>.

<sup>3</sup> See, for example: S. 2903 (Schatz, D-HI, 116<sup>th</sup> Congress); H.R. 5194 (Casten, D-IL, 116<sup>th</sup> Congress).

<sup>4</sup> Network for Greening the Financial System (NGFS), *Climate scenarios for central banks and supervisors*, (June 24, 2020), available at <https://www.ngfs.net/en/ngfs-climate-scenarios-central-banks-and-supervisors>.

<sup>5</sup> Her Majesty's Government, United Kingdom, *Green Finance Strategy: Transforming Finance for a Greener Future*, (July, 2019), available at [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/820284/190716\\_BEIS\\_Green\\_Finance\\_Strategy\\_Accessible\\_Final.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/820284/190716_BEIS_Green_Finance_Strategy_Accessible_Final.pdf).

<sup>6</sup> NFGS/Banque de France, *NFGS Climate Scenarios for central banks and supervisors*, (June, 2020), available at [https://www.ngfs.net/sites/default/files/medias/documents/820184\\_ngfs\\_scenarios\\_final\\_version\\_v6.pdf](https://www.ngfs.net/sites/default/files/medias/documents/820184_ngfs_scenarios_final_version_v6.pdf).

<sup>7</sup> Australian Accounting Standards Board (AASB), *Climate-related and other emerging risks disclosures: assessing financial statement materiality using AASB/ IASB Practice Statement 2*, (April, 2019), available at [https://www.aasb.gov.au/admin/file/content102/c3/AASB\\_AJASB\\_Joint\\_Bulletin\\_Finished.pdf](https://www.aasb.gov.au/admin/file/content102/c3/AASB_AJASB_Joint_Bulletin_Finished.pdf).

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<sup>9</sup> Financial Stability Board (FSB), *TCFD: 2019 Status Report*, (June, 2019), available at <https://www.fsb-tcfd.org/publications/tcfd-2019-status-report/>.

<sup>10</sup> FSB, *Stocktake of Financial Authorities' Experience in Including Physical and Transition Climate Risks as Part of Their Financial Stability Monitoring*, (July 22, 2020), available at <https://www.fsb.org/wp-content/uploads/P220720.pdf>.

<sup>11</sup> Greg Baer and Bill Nelson, "What Next for Capital Requirements?: An Unprecedented by Not Impossible Challenge," *BPI Blog*, May 27, 2020, available at <https://bpi.com/what-next-for-capital-requirements/>.

<sup>12</sup> Federal Reserve Bank of New York Executive Vice President Kevin J. Stiroh, *Policy Efficiency in Supervision*, (March 1, 2019), available at <https://www.newyorkfed.org/newsevents/speeches/2019/sti190301>.

<sup>13</sup> FRB Regulation Q, Subpart E - Risk-Weighted Assets-Internal Ratings-Based and Advanced Measurement Approaches, 12 C.F.R. § 217.101 (2020), available at <https://www.govinfo.gov/content/pkg/CFR-2020-title12-vol2/pdf/CFR-2020-title12-vol2-part217-subpartE.pdf>.

<sup>14</sup> Office of the Comptroller of the Currency (OCC), FRB, Federal Deposit Insurance Corporation (FDIC) Changes to Applicability Thresholds for Regulatory Requirements, 12 C.F.R. §§ 3, 50, 217, 249, 324, & 329, 84 Fed. Reg. 59230 (November 1, 2019), available at <https://www.govinfo.gov/content/pkg/FR-2019-11-01/pdf/2019-23800.pdf>.

<sup>15</sup> Basel Committee on Banking Supervision (BCBS), *Basel III: Finalising post-crisis reforms*, (December, 2017), available at <https://www.bis.org/bcbs/publ/d424.pdf>.

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