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Ceres Accelerator
for Sustainable Capital Markets

REPORT

The Changing Climate for Credit Unions

Ceres Accelerator for Sustainable Capital Markets

Filene Research Institute

Acknowledgments

This report was produced collaboratively by researchers at the Ceres Accelerator for Sustainable Capital Markets and the Filene Research Institute, with support from Callahan & Associates.

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About Filene Research Institute

Filene Research Institute (www.filene.org) is an independent "think and do" tank dedicated to strengthening the credit union movement and improving the financial lives of U.S. households and communities. Since its inception in 1989, Filene has been a catalyst for change in and for credit unions and the people they serve by producing actionable research, innovating and incubating new ideas, and bringing together communities of leaders and experts.

Filene collaborates with leading academics at universities across the United States to produce original and applied research focused on some of the most important challenges facing credit unions and the people and communities they serve. With nearly 500 credit union members representing nearly 8 million consumers, Filene's multipronged approach and sustained focus on cooperative finance presents a unique opportunity to make a positive, scalable impact on the financial security and social and economic prosperity of U.S. families and communities. Across its body of work, Filene brings together diverse people and ideas to deliver innovative, sustainable approaches to helping people achieve financial well-being and prosperity.

Filene has a long history of exploring big strategic issues and thorny problems alongside the most immediately pressing issues in consumer finance. Some of these issues may not be at the top of the agenda for most credit unions today but represent opportunities for the future and may soon demand credit unions' immediate attention and response. For instance, Filene explored diversity, equity, and inclusion (DEI) through extensive research on how credit unions can better serve immigrant populations and communities of color before launching a Center of Excellence for DEI in 2020 (filene.org/learn-something/center-for-dei).[1] Similarly, Filene has explored credit union community outreach and social impact initiatives, including corporate social responsibility and environmental sustainability in credit union operations and strategy, for more than a decade, leading to the launch of a dedicated Center for Community Social Impact in 2021 (filene.org/learn-something/communityimpact). Both initiatives coincided with renewed efforts among credit unions to lean into their mission to support members' and communities' well-being as a strategic differentiator.

Prior Filene Research on Community Social Impact and the Environment

- *Community Social Impact: The Urgency of Now*. 2022. filene.org/527.
- *Amplifying Social Impact: The State of Credit Union Giving*. 2020. filene.org/512.
- *Risk Management's New Tool: Corporate Social Responsibility*. 2016. filene.org/398.
- *Improving Social and Environmental Sustainability: A Credit Union Assessment and Comparison*. 2014. filene.org/317.
- *Credit Union Social Responsibility: A Sustainability Roadmap*. 2010. filene.org/207.
- *Back to the Future: Integrating Sustainability into Credit Union Strategy*. 2008. filene.org/155.

About Ceres

Ceres is a nonprofit organization working with the most influential capital market leaders to solve the world's greatest sustainability challenges. Through our powerful networks and global collaborations of investors, companies, and nonprofits, we drive action and inspire equitable market-based and policy solutions throughout the economy to build a just and sustainable future. For more information, visit ceres.org and follow @CeresNews.

About Ceres Accelerator for Sustainable Capital Markets

Ceres is a nonprofit organization working with the most influential capital market leaders to solve the world's greatest sustainability challenges. The Ceres Accelerator for Sustainable Capital Markets is a center of excellence within Ceres that aims to transform the practices and policies that govern capital markets to reduce the worst financial impacts of the climate crisis. It spurs action on climate change as a systemic financial risk—driving the large-scale behavior and systems change needed to achieve a net zero emissions economy through key financial actors including investors, banks, and insurers. The Ceres Accelerator also works with corporate boards of directors on improving governance of climate change and other sustainability issues. For more information, visit ceres.org and ceres.org/accelerator and follow @CeresNews.

Examples of Ceres Reports and Resources on Climate Change and Finance

- *Financing a Net Zero Economy: The Consequences of Physical Climate Risk for Banks*. 2021. www.ceres.org/resources/reports/financing-net-zero-economy-consequences-physical-climate-risk-banks.
- *Turning Up the Heat: The Need for Urgent Action by US Financial Regulators in Addressing Climate Risk*. 2021. www.ceres.org/resources/reports/turning-heat-need-urgent-action-us-financial-regulators-addressing-climate-risk.
- *Financing a Net Zero Economy: Measuring and Addressing Climate Risk for Banks*. 2020. www.ceres.org/resources/reports/financing-net-zero-economy-measuring-and-addressing-climate-risk-banks.
- *Ceres Roadmap 2030: A 10-Year Action Plan for Sustainable Business Leadership*. 2020. roadmap2030.ceres.org/.

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Foreword

Dear Colleagues,

Growing up in Boston, a trip to Filene's Basement was a special family event. I did not know back then that the founder, Edward Filene, was also one of the leaders in the early movement for credit unions. Decades later, it is a special opportunity to partner with Ed Filene's namesake, the Filene Research Institute, on this report, "The Changing Climate for Credit Unions."

Through this partnership, we have produced a first-of-its-kind report on the climate risks and opportunities facing our nation's credit unions. The report makes clear that thousands of credit unions (as well as many of the 100+ million people that utilize them) have significant and to-date unaddressed risks arising from the changing climate. As this report documents, there are growing risks from increasingly extreme weather (fires, floods, hurricanes, and more) and increasingly important transitions (such as changes in regulation, technology, and other factors,) as well as legal and reputational risks, to credit unions across the nation.

We hope this report will highlight both the challenges and opportunities facing the credit union industry, both now and in the future. We also hope that every credit union member, manager, director, and regulator internalizes the recommendations we have outlined. For it is only through immediate action that credit unions will become more prepared to address the risks and benefit from the many growth opportunities in the markets for renewables, electric vehicle equipment, and other new and emerging sustainable technologies.

This report was only possible from the professionalism, hard work, and diligence of the many people listed in the acknowledgments. Ceres is honored to have partnered with Filene and their entire team. I also want to recognize all of the Ceres team, with a special note of Jim Scott's contributions.

We look forward to collaborating further with all of you to ensure credit unions are safer and more prepared for the growing climate risk they face.

Sincerely,

Steven M. Rothstein
Managing Director
Ceres Accelerator for Sustainable Capital Markets

Ceres Accelerator has been working with the financial sector and its regulators to produce several reports, webinars, and other resources that are available at ceres.org/accelerator.

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Preface

Climate change is a threat to humanity's existence, and to reverse the damaging trends of climate change requires that all humans, industries, and communities change their mindsets and actions. This includes credit unions. This is why the following report, "The Changing Climate for Credit Unions," is both timely and relevant. The report argues that it would be incredibly risky for credit unions to ignore the threats posed by climate change, with 60% of U.S. credit unions physically located in vulnerable locations that are at risk from damage due to extreme weather events and with credit unions having $141 billion in assets from high-risk industries that are evolving due to climate change.

However, the most impressive aspect of this report is that it provides credit unions with insights about how to respond to the climate crisis, mitigate risks, and become part of the solution. The report highlights ways that credit unions can (1) look inward, toward their own products, practices, and investments to mitigate climate risks; (2) look outward, to help the communities they serve, such as low-income and minoritized communities, to build resilience to climate change; and (3) come together as an industry to formulate shared visions, values, and practices for greater collective impact and to leverage influential networks for change.

Often, when credit unions think about mitigating climate change, they focus on extreme events, such as wildfires or hurricanes, and they work to assist families and communities after a catastrophic disaster. Aid and assistance post-disaster is necessary and important, but it does not address the root causes of climate change and the systems and structures that are compounding the problem and threatening our day-to-day existence. This report asks the industry to conduct a self-examination of its contributions to climate change, educate and mobilize stakeholders, co-create climate solutions, take bold steps, and leverage resources and social networks to accelerate progress toward a better climate future.

As Filene's Fellow for the Center for Community Social Impact, I have written about how daunting it can be for credit unions to engage in the hard work of changing systems and structures that perpetuate harm (filene.org/learn-something/reports/community-social-impact-the-urgency-of-now). But credit unions have incredible potential to build climate resilience within their membership, communities, and societies by addressing what I call the "slow-moving disasters"—poverty,

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homelessness, inequality, racial injustice, and others—by helping to equalize access to human, social, and financial capital.

When families have access to human, social, and financial capital, they are provided with economic freedom and opportunities. They are not forced to live in fire- or flood-prone neighborhoods because those are the only neighborhoods that they can afford to live in, and they can evacuate when a disaster is looming because they have an affordable car and savings in the bank to pay for fuel and shelter. Economic freedom and opportunity for all will result in climate justice, a system in which the detrimental impacts of climate change are not disproportionately borne by select social and demographic groups.

As Director of the Design Lab at UC San Diego, I often encourage industries to think about next practices rather than best practices, be future-oriented rather than look to the past for solutions, and prototype new ideas that are creative, bold, and audacious. As a Filene Fellow, I ask credit unions to do the same. Can we envision a future where we do more good than bad for the planet, where we have systems of equity and justice in which all families have the opportunity to thrive, succeed, and have healthy lives, and where credit unions are reaping financial benefits by maximizing their social impact? Yes, I believe we can.

Filene Fellow for Community Social Impact
Dr. Mai Thi Nguyen
Director, The Design Lab
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Executive Summary

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Climate change is one of *the* most important—if not the most important—challenges of the twenty-first century. Transformational change is necessary to confront and adapt to the increasingly severe impacts of climate change.[2] Financial institutions, including credit unions, have a role to play in this transformation. In October 2021, a first-of-its-kind report from the U.S. Financial Stability Oversight Council stated clearly that climate change is an "emerging threat to the financial stability of the United States"[3] and called on member regulatory bodies, including the National Credit Union Administration, to begin planning to develop the data and methods necessary to assess and mitigate climate-related risks.[4] In November 2021, the National Credit Union Administration (NCUA) board chair Todd M. Harper reiterated that "[a]s a regulator and insurer, the NCUA will continue to work to ensure that the institutions it oversees remain resilient against all material risks, including climate financial risk."[5]

Transformational change is necessary to confront and adapt to the increasingly severe impacts of climate change.

Credit unions are an integral part of the U.S. consumer finance system, offering an important alternative to commercial banks and nonbank financial services providers. Today, there are almost 5,000 credit unions spread across the United States serving over 130 million people and representing over $2 trillion in assets.[6] The influence of credit unions has grown over the past 10+ years, outpacing banks in asset growth, loan growth, and customer acquisition.[7] There is an enormous diversity among credit unions, and credit union members represent a diverse cross-section of U.S. households. The vast majority of credit unions are among the smallest financial institutions in the U.S., but these credit unions are also often the most committed to serving communities that would otherwise go without access to safe and affordable financial services. As not-for-profit financial cooperatives, credit unions seek to harness growth to a mission of serving and supporting local and regional communities across the country.

Credit unions have an essential role to play as financial system stakeholders mobilize to address climate change and the challenges it creates and, ultimately, as the United States undertakes a transition to a net zero

carbon emission economy. This research report, produced jointly by Filene Research Institute and the Ceres Accelerator for Sustainable Capital Markets, offers an overview of the implications of climate change for credit unions, as well as recommendations for more effective climate risk management. It describes the climate-related physical and transition risks facing credit unions, the potential impact of climate change on credit unions, the current state of credit union approaches to climate change, and the opportunities available for credit unions from climate adaptation finance. It also provides concrete recommended actions that individual credit unions can take to begin to measure and mitigate the impacts of climate change on their organizations and the credit union system. To better understand the climate risks facing other U.S. financial institutions, such as banks, please see the Ceres Accelerator's 2020 report on bank-related transition risk and 2021 report on physical risk.

What Is at Stake for Credit Unions

Climate change is not a problem for the future but a moment of truth for today. Credit unions across the country already have experienced the devastating impacts of climate-related disasters like hurricanes and wildfires. The National Oceanic and Atmospheric Administration (NOAA) estimated that in 2021 the U.S. had losses of $145 billion and 688 lives due to climate change.[8] Credit unions have responded quickly to support their communities during these emergencies, raising and distributing millions of dollars and other aid. But credit unions also have a role to play in preparing for and mitigating climate risks more proactively. Going forward, this report estimates that more than 60% of all U.S. credit unions and at least $1.2 trillion in credit union assets are at physical risk due to acute and chronic climate-related weather events and hazards. This is a preliminary and, ultimately, conservative estimate based on the location of more than 11,000 credit union branches (over half of all credit union branches) in Federal Emergency Management Agency (FEMA)–designated at-risk counties (see chapter 3).[9] More than 60% of credit union deposits, around 60% of credit union loans, and more than 57% of mortgages originated by credit unions in 2020 fall within this at-risk geography.

More than 60% of all U.S. credit unions and at least $1.2 trillion in credit union assets are at physical risk due to acute and chronic climate-related weather events and hazards.

In addition, credit unions are at risk from the structural and local economic and social transitions that will be required to meet the challenges of climate change. The memberships and communities that many credit unions serve—and depend on for their own growth—will be transformed by climate change, with implications for carbon-intensive assets, shifts in economic activity and jobs, changing technology and infrastructure, new policy and regulation, and changing consumer preferences. These risks are known as transition risks. While data are limited, this report provides a baseline conservative estimate that 6 to 7% of federally chartered credit unions—representing some $141 billion in assets—are at moderate to high risk of disruption due to the alignment of their fields of membership with high greenhouse gas (GHG)–emitting (and thus high-transition-risk) industries, such as petroleum refining specifically and manufacturing and utilities generally.[10] These numbers offer only a start; they do not capture the full credit union industry, as they do not include state-chartered credit unions;[11] nor do they reflect the transition risks facing community-chartered credit unions resulting from the impacts of climate change on local economies. These risks also will increase over time if the credit unions, their communities, and their members do not act in a proactive manner to make necessary changes.

6 to 7% of federally chartered credit unions—representing some $141 billion in assets—are at moderate to high risk of disruption due to the alignment of their fields of membership with high-GHG-emitting (and thus high-transition-risk) industries.

There is a wide range of perspectives among credit union leaders on how best to prepare for climate-related physical and transition risks—or indeed, on the importance of climate change for the financial services industry overall—and taken as a whole, the response to climate change from the credit union industry has been limited. Some credit unions, however, offer strong examples for their peers of how to adapt quickly and turn risk into opportunity. Some credit unions have partnered with state governments and the nonprofit sector to deliver innovative green loans for low-moderate-income borrowers; others are taking strides to measure, report, and offset the greenhouse gas emissions linked to their financing. This report finds that the market opportunity for credit

unions offering products and services that advance the transition to a net zero economy is significant and will continue to grow. Indeed, there are important growth opportunities available to credit unions that seek to differentiate their business on the basis of their response to climate change. There also is a collective opportunity for the credit union system in aligning climate risk mitigation and adaptation with credit union inclusion, well-being, and social impact initiatives more broadly.

How Can Credit Unions Respond?

What can readers find in this report? First, this report discusses the climate-related physical and transition risks facing credit unions today, as well as some of the opportunities for credit unions to embrace in the face of climate change. Second, it reports on the perspectives of credit union leaders from across the credit union system and describes several exemplary organizations that have already taken action on climate change. Third, it offers a very preliminary quantification of the climate change risks for credit unions and discusses how credit unions can begin to tackle climate change risk measurement and management. Finally, it lays out the practical action steps for credit unions to take to confront the challenges of climate change more proactively and strategically. By taking action along the lines recommended by this report, credit unions can make climate change a strategic priority, jump-start and accelerate their climate risk measurement and management efforts, and serve their members in a way that also drives revenue and supports growth. These actions will require that the credit union system develop an understanding of the potential impacts from climate change and develop collective resources to measure, analyze, disclose, and mitigate their exposure. This report does not dictate a single response for all credit unions, nor does it make recommendations for regulatory action; instead, recognizing the diversity among credit unions, it identifies emerging trends and draws from the most up-to-date research and examples to offer information and resources for credit unions and their leaders.

Most importantly, this report argues for a collective response. There are real benefits for individual credit unions to take action, but an even more productive and successful approach will be a collaborative and coordinated one that focuses on the development of system-wide resources to share and scale data and tools, such as through the credit union technology supply chain, state leagues and associations, credit union service organizations (CUSOs), and other credit union industry networks.

Summary of Recommendations

This report recommends that credit unions pursue the following action steps:

1. **Publicly acknowledge that climate change poses a risk to their balance sheet and to their members.** This will be helpful in mobilizing stakeholders and the credit union system toward addressing the risks and opportunities associated with climate change.
2. **Conduct research and educate themselves, their members, and other stakeholders about climate-related risks and opportunities facing their organizations.** This is not only critical to understanding the extent of climate-related risks and business opportunities but also to recognizing how climate change is already impacting credit unions and their communities—often the most vulnerable communities, which are also disproportionately low-to-moderate-income and Black, Indigenous, People of Color (BIPOC) communities.
3. **Begin collecting climate-relevant data for their organization.** Credit unions know well that the success of risk management depends on data. Any effort to address the risks of climate change will require credit unions to collect and analyze appropriate data, such as the geolocation of their assets and scope 1, 2, & 3 GHG emissions.
4. **Adopt the recommendations of the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD).** The TCFD's framework has quickly become a best-practice approach for financial institutions to report and leverage timely, decision-useful, climate-relevant information for the purposes of risk assessment, capital allocation, and strategic planning. When relevant, credit unions should leverage this approach to guide their own risk reporting and overall strategy.
5. **Conduct climate scenario analysis of their loan portfolios** to better understand the unique climate-related physical and transition risks in their balance sheet and business model.
6. **Invest in their organizations while leveraging partnerships and building system-wide resources.** Climate risk assessment and climate adaptation strategy require new capabilities, and

yet many credit unions are already strained for resources. Credit unions will be better positioned to respond to climate change by expanding internal talent with climate change expertise and investing in internal processes and systems that can help orient the organization and make climate risk management more feasible and efficient. At the same time, many credit unions may not have the resources for dedicated talent and will be better served through a partnership-driven approach. There is a risk that the smallest credit unions serving the most vulnerable local communities will be further marginalized if they attempt to replicate the responses of much larger institutions. System-wide resources will be necessary for all credit unions to benefit equally from climate change preparations.

7. **Foster proactive communication among credit unions, national trade associations, state leagues, policymakers, and state and federal regulators.** A major source of regulatory uncertainty for credit unions is the timing and scope of potential climate-related regulation. This report makes no specific recommendations regarding regulation. It makes clear, however, that developing strong working relationships among these system stakeholders, with transparent expectations, will allow credit unions to be less reactive and move forward with more clarity and certainty.[12]

As Inclusiv's Center for Resiliency and Clean Energy has argued, in the aftermath of recent natural disasters, credit unions have been among the first to open their doors and provide cash to their members even when their own systems were impaired. Moreover, many credit unions in areas affected by extreme weather-related events have started to help their members prepare for crises through financial education and counseling and encouraging saving for an emergency.[13] Credit unions have the scale and diverse geographic footprint, the community connections, and the financing capacity and innovation capability to deploy capital in support of a transition to a net zero economy. Ultimately, credit unions have a special opportunity not simply to react to the challenges of climate change but to lead the consumer finance system proactively toward a climate-resilient future. Open dialogue and system collaboration will allow credit unions to seize this opportunity.

Why It Matters

A Credit Union System Perspective

Climate change affects all of us. As climate-related events accelerate, we can expect outsize impact on our most vulnerable people and communities, those that often lack the finances and supporting infrastructure to withstand and recover from these disasters.

As climate-related events accelerate, we can expect outsize impact on our most vulnerable people and communities.

Cathie Mahon
President/CEO
Inclusiv

Neda Arabshahi
Director, Center for Resiliency and Clean Energy
Inclusiv

Now is the time for credit unions to double down on driving equitable financial services in our most vulnerable communities. Credit unions can help communities become more prepared and resilient in the face of the rapidly increasing number of climate events in the following ways:

- Develop emergency preparedness plans to remain in operation, protect the integrity of members' accounts, and to provide access to cash in a crisis.
- Help members prepare for crises through financial education and counseling, and encouraging saving for an emergency.
- Provide flexible loans and repayment options to help members "weather" disaster-driven economic disruptions.

Experience shows that credit unions most responsive to member needs during or immediately after climate crises are rewarded with member growth, visibility, and loyalty. Preparing now to cushion blows with flexible financing can be critical to the long-term sustainability of the institution and community.

And credit unions can start now to address some of the root causes of climate change, while working together at the national and international level to slow climate change by investing in and financing new, sustainable, and green solutions such as rooftop solar projects.

In this report, the Ceres Accelerator for Sustainable Capital Markets and Filene Research Institute offer an overview of the implications of climate change for credit unions, the risks facing credit unions, and the opportunities available for credit unions to adapt their strategies toward advancing climate solutions. With concrete actions and a supportive regulatory framework, credit unions can move to mitigate risks in their portfolios, prepare for climate-related events, and accelerate development of loan products to finance clean and renewable energy. These actions support climate solutions and build local resilience.

Credit unions are needed before, during, and after climate events that impact their communities. As a credit union system, the NCUA should be supporting credit unions to prepare for and mitigate risk while building system-level resources now that can provide support to credit unions and their members impacted by climate events. Building preparedness and resilience is a system-wide necessity. Raising capital, developing the financing products, and designing guarantees and credit enhancements will be critical to the strength and viability of members, institutions, communities, and the system as a whole.

The Changing Climate for Credit Unions

CHAPTER 1

How Is Climate Change Impacting Credit Unions and the Credit Union Market?

Climate change is not a problem for the future but a moment of truth for today. As the U.S. Financial Stability Oversight Council (FSOC) recently affirmed, climate change already has impacted both financial institutions and consumers and "will likely be a source of shocks to the financial system in the years ahead."[14]

Climate change–related extreme weather events have intensified in recent years. More than 40% of U.S. residents live in counties hit by climate disasters in 2021, and more than 80% experienced a heat wave.[15] In 2021, the impacts of fires and severe storms also spread, causing over $145 billion in losses in the United States.[16] In just the last few years, California has experienced record-breaking wildfires, in both number and size, that have

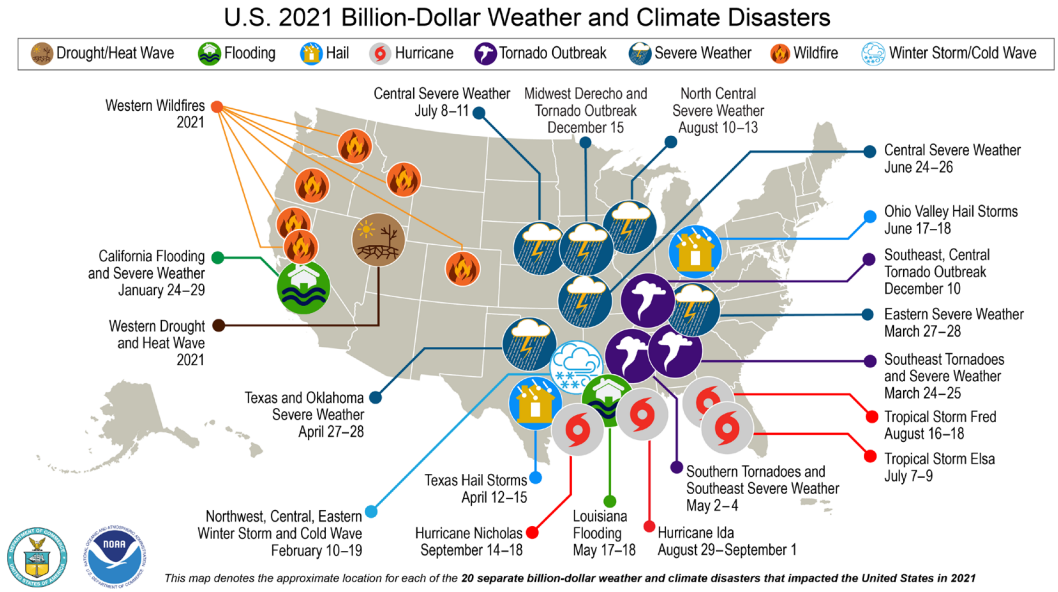
taken hundreds of lives, bankrupted the state's largest utility, left millions regularly without power and brought home insurability into question.[17] Florida is facing rapidly rising sea levels and now-routine flooding that are eroding coastal property values and wiping out freshwater supplies.[18] Texas experienced two devastating once-in-a-thousand-years flood events between 2016 and 2019, each caused by torrential rains of 40 inches or more.[19] Further highlighting the systemic nature of this risk is the report written by the Federal Reserve Bank of Dallas on the impact of climate risk in their region.[20] In fact, between 1980 and 2020, Texas experienced 124 separate billion-dollar disasters—the most of any state.[21] A "megadrought" in the U.S. West has created the driest two decades in the region in 1,200 years; water levels at Lake Mead and Lake Powell, the two largest reservoirs in the country, are at the lowest levels on record.[22] At the end of 2021, a suburban wildfire destroyed hundreds of homes outside Denver, Colorado.[23]

As the frequency and severity of extreme weather events has increased significantly in recent years, so has the cost. According to NOAA's National Center for Environmental Information (NCEI), 2020 was the most expensive year yet for weather and climate disasters: "There were 22 separate billion-dollar weather and climate disasters across the United States, shattering the previous annual record of 16 events, which occurred in 2017 and 2011."[24] There were another 20 separate billion-dollar disasters in 2021.[25]

These disasters have a disproportionate impact on the health, well-being, economic security, and the mobility of vulnerable populations, including low and moderate income communities, communities of color, Indigenous communities, people living in the Global South, and women

FIGURE 1

U.S. BILLION-DOLLAR WEATHER AND CLIMATE DISASTERS IN 2021

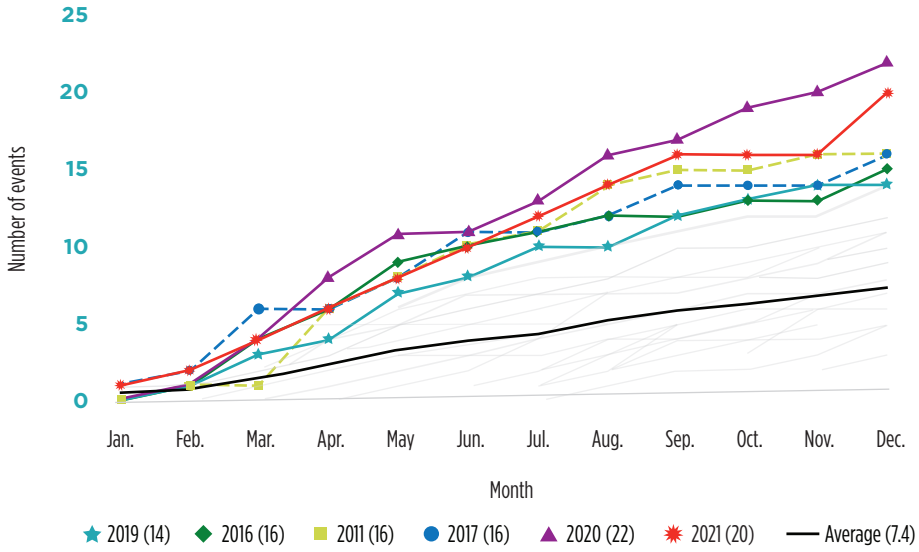


Source: www.climate.gov/media/13976.

and children. "Natural" disasters are made worse by inequalities produced through human activities.[26] Flooding follows historical patterns of exclusion through discriminatory policies like redlining;[27] heat waves hit city dwellers and communities of color much harder due to population distributions and urban built environments;[28] female caretakers and children are predominantly more vulnerable to acute weather events.[29] As one landmark study of natural disasters reports, "the key characteristics that seem to influence disaster vulnerability most are socioeconomic status, gender, and race or ethnicity."[30]

FIGURE 2

U.S. BILLION-DOLLAR DISASTER EVENTS, 1980–2021



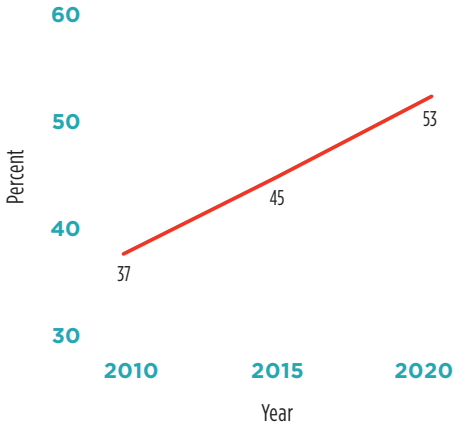
Source: www.climate.gov/media/13977.

At the same time, there are signs of consumers and companies quickly adapting to the needs of the climate transition. According to BloombergNEF's annual Energy Transition Investment Trends report, total investment in the climate transition amounted to $755 billion in 2021, significantly growing investment from prior years.[31] Renewable energy sources such as solar and wind have grown significantly, providing, for example, a record 21% of all electricity generation in the United States in 2020 (surpassing coal and nuclear for the first time).[32] Sales of electric vehicles are growing dramatically. Environmental, social, and corporate governance (ESG) investing has also grown, and Moody's ESG Solutions estimates that green and sustainable bond issuances will grow 36% in 2022 to over $1.35 trillion.[33] At the end of 2021, ESG funds accounted for 10% of global fund assets.[34]

At least some of these developments are consumer-driven. Recent surveys suggest that a majority of adults across multiple countries are concerned about climate change—and that they are looking to companies to plan for and shoulder the costs of confronting climate change and transitioning to a net zero carbon economy. Globally and in the United States, a majority of people say that climate change is a very serious problem and is affecting where they live; these attitudes

FIGURE 3

A GROWING PERCENTAGE OF THE U.S. PUBLIC SAY CLIMATE CHANGE IS A SERIOUS PROBLEM



Source: Funk, Cary, et al. 2020. "Concern Over Climate and the Environment Predominates Among these Publics." *Pew Research Center*, September 29, 2020. www.pewresearch.org/science/2020/09/29/concern-over-climate-and-the-environment-predominates-among-these-publics/.

are on the rise, up from well *under* half just 10 years ago.[35] In the United States, almost 70% of adults say they are very or somewhat concerned about climate change; 41% say they expect businesses to change a lot to fund efforts to combat climate change.[36] Many companies are turning their business models to embrace these demands. At least one climate-focused fintech is raising hundreds of millions of dollars in investment in advance of going public.[37]

What Is a Net Zero Carbon Economy?

In plain terms, "net zero" means that human activities will not add climate change–causing GHG emissions to the atmosphere over and above what the planet is able to absorb. A net zero carbon economy is achievable only by dramatically reducing carbon emissions (by shifting energy sources, moving to electric transport, changing agricultural and consumption patterns, etc.) and by efforts through nature restoration and new technologies to increase carbon absorption.[38]

The transition to a net zero carbon economy will require much more transformation, including major overhauls in energy generation and consumption, investments in new buildings and home retrofits, shifts in private and public transportation technologies and use patterns, and more. This transformation has the potential to be a net driver of economic growth.

Whether facing the risks of climate-related disasters or seeking out new growth opportunities in the climate transition, credit unions have a role to play.

Two Kinds of Risk

At the highest level, there are two categories of climate-related risk: physical risk and transition risk.[39]

Definitions of Climate Change Risk

- **Physical risk:** Risk of harms to people and property arising from acute, climate-related disaster events and longer-term chronic shifts in climate and weather patterns.
- **Transition risk:** Risks arising from the technological, legal, regulatory, policy, and reputational stresses and disruptions of transformations required by organizations, economic sectors, and communities to adapt to climate change and transition to a less carbon-intensive and, ultimately, net zero carbon economy and society.

Physical Risks

Physical risks are the risks to real assets due to climate-fueled natural occurrences. These can be acute disasters, such as extreme weather events: hurricanes, fires, floods, heatwaves, etc. These also can be longer-term or even chronic phenomena, such as sea level rise, higher temperatures and droughts, changes in precipitation patterns, or ocean acidification.

Physical risk is critical for credit unions and likely adds substantially to total climate risk. In the context of credit unions, physical risks pose potential disruptions to organizations' capabilities to continue serving members due to physical damage to people, property, and processes. These might impact a credit union directly (for example, if extreme weather were to damage a branch or data center) or indirectly, by impacting borrowers' ability to repay their loans (for example, due to a health emergency, loss of employment, or damage to loan collateral).

It is important to understand the wide range of physical risks associated with climate change. Extreme weather events like wildfires, hurricanes, and flooding are the most obvious examples, and many credit unions already have experience with these disasters and have begun to develop more robust emergency preparedness and response systems.[40] But other climate-related physical risks include, for example:

- **Flooding and rising seas.** More than $1 trillion of property and structures is already within a few feet of current sea level, and by 2050, most U.S. coastal areas will be at risk of 30+ days of flooding each year.[41] Official FEMA estimates are that at least 8.7 million U.S. residents live in areas at risk of flooding, but independent research suggests that up to 14.6 million properties are at risk of a 100-year flood, including far away from coastlines.[42] The result is that homeowners, lenders, and insurers may be underestimating risks on their balance sheets.
- **Heat stress.** Heatwaves can exact a terrible toll on human health, but heat also can impact infrastructure like buildings, roads, bridges, train tracks, and more, damage agriculture and produce food insecurity, and put stress on the energy grid.[43]
- **Ocean warming and acidification.** Changes in the oceans could have negative impacts on the 4.3 billion people who rely on fish for food.[44]

Importantly, because histories of poverty, inequality, and environmental racism have resulted in landscapes of unequal and disparate exposure to the harms of climate change, the physical risks of climate change may be born disproportionately by already

vulnerable populations.[45] For example, communities of color and low-income, immigrant, and Indigenous communities often face higher levels of exposure to industrial pollution and natural resource extraction due to their concentration in compromised areas.[46] The poisoning of tap water in Flint, Michigan and other communities around the United States and the contamination of Navajo lands through the extraction of uranium ore offer heartbreaking yet vivid examples.[47]

As the Environmental Protection Agency makes clear in its recent analysis, "the most severe harms from climate change fall disproportionately upon underserved communities who are least able to prepare for, and recover from, heat waves, poor air quality, flooding, and other impacts."[48] Research on environmental justice thus shows that equitably ameliorating the effects of climate change and ensuring an equitable transition to a net zero carbon economy requires efforts to expand material opportunities and reduce resource inequality as well as recognize, protect, and expand the capabilities and mechanisms of governance through which people can fully participate in society.[49] Recent research also shows that capacity building and financial investments in local communities can increase resilience and lower vulnerability to climate risks.[50]

Transition Risks

Transition risks are the economic and financial risks arising from the stresses and disruptions of transformations required by organizations, economic sectors, and communities to adapt to climate change and transition to a less carbon-intensive and, ultimately, net zero carbon economy and society. These transformations include the adoption of new green energy sources, shifts in transport (e.g., to electric cars and public transportation), changes in agriculture, including how we grow our food and what we eat, and much more. Transition risks can include shifts in policy, regulatory regimes, consumer preferences, economic structure and opportunities, reputational impacts, and more.

From the point of view of credit unions, transition risks are linked to changes in business conditions, the regulatory environment, or the communities credit unions serve. These changes then directly affect how credit unions operate or indirectly impact credit unions by affecting how credit union members make and manage their money, service their loans, and engage with financial services providers.

For example, whether driven by new technologies, policy and regulation, or shifting consumer preferences, the transition to a net zero carbon economy will require restructuring of key economic sectors—the automotive industry, for example, in supporting the switch to electric vehicles or, most prominently, energy production, and especially, coal, oil, and gas industries. Impacts on those industries will have ripple effects on employees and their families, supply chains, and partner organizations (vendors, insurance companies, financing

institutions) and *their* employees, as well as the communities where these businesses operate and people live and which counted on companies for tax revenues and economic growth, and so on.

Another example includes the "knock-on effects" of physical disasters. In one case study of flooding and the Florida real estate market, these knock-on effects are estimated to exceed the direct costs of the flooding itself: as the prices of affected homes rise, as buyers price in future hazards, insurance premiums increase, and housing availability changes. The Florida residential real estate market could see a devaluation in property values of $10–$30 billion by 2030 and $30–$80 billion by 2050.[51] A recent study from Milliman found that due to not fully accounting for the potential costs of flooding, single-family residential properties in the United States may be overvalued by $520 billion.[52]

Scenarios like these require careful planning to navigate, and there remains much uncertainty about how exactly climate transitions will unfold. There are market demands and consumer behavioral preferences to map, reputation and liability risks to incorporate, property and asset values to calculate and project, etc. Furthermore, as with physical risks, transition risks are unevenly distributed. Certain economic sectors and communities will bear the brunt of the transformations required, so the transition risks for credit unions more closely linked to those sectors and communities will be higher.

Confronting and managing transition risks will require companies to track, measure, disclose, and ultimately reduce their own carbon emissions and those their activities feed into. For financial institutions, this means tracking direct and indirect emissions, including those linked to lending activities and balance sheet generally.

The October 2021 U.S. FSOC report recommends that financial institutions adopt the framework developed by the TCFD. The proposed order from the Securities and Exchange Commission (SEC) on corporate climate disclosure also utilizes the TCFD framework. The Financial Stability Board is an international organization that makes regulatory recommendations to the G20 nations. While created with larger organizations than most credit unions in mind, the TCFD framework has quickly become a best-practice approach for companies of all kinds to report and leverage timely, decision-useful climate-relevant information for the purposes of risk assessment, capital allocation, and strategic planning. This framework is already widely used by banks and other corporations in the United States and internationally. As of February 2022, 3,000 organizations—including many large financial institutions—had joined.[53] There are also several nations that are mandating the use of TCFD disclosure as part of their regulatory system. When it comes to credit unions, the TCFD recommendations offer a useful strategy framework, even for those organizations that may not be ready to fulfill it completely.

To gain a better understanding of a company's climate-related risk and stand up the pillars of a risk mitigation plan, TCFD recommends that companies share climate-related information in the following areas:

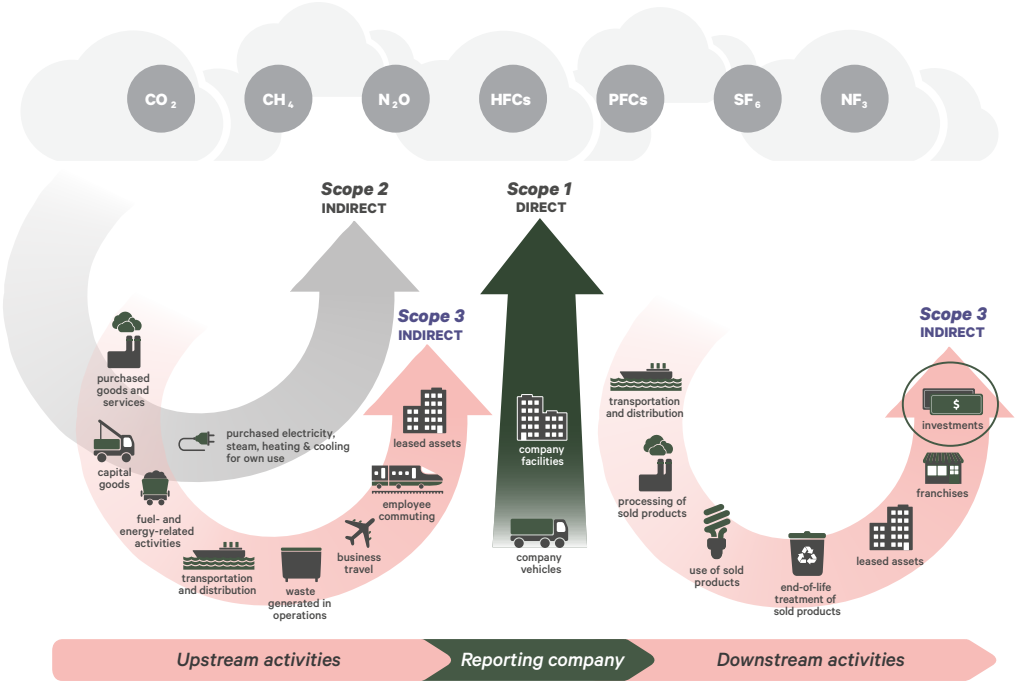
- Governance
- Strategy
- Risk management
- Metrics and targets

Several credit unions have already begun this data collection process, including Clearwater Credit Union, Self-Help Credit Union, Verity Credit Union, and VSECU in the United States and Vancity in Canada. These credit unions are leveraging the GHG reporting models developed by the Partnership for Carbon Accounting Financials (PCAF). PCAF builds on the global standard for carbon accounting and reporting, known as the Greenhouse Gas Protocol.[54]

The GHG Protocol classifies emissions into scope 1 (direct emissions from an organization's buildings, vehicles, and other infrastructure), scope 2 (indirect emissions from energy purchased by an organization but generated elsewhere, e.g., electricity purchased from

FIGURE 4

SCOPE 1, SCOPE 2, AND SCOPE 3 GHG EMISSIONS



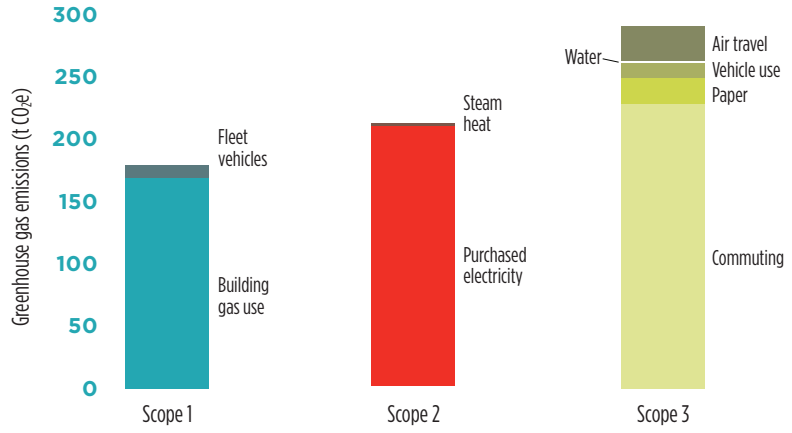
Source: PCAF (Partnership for Carbon Accounting Financials). 2020. "The Global GHG Accounting and Reporting Standard for the Financial Industry." carbonaccountingfinancials.com/files/downloads/PCAF-Global-GHGStandard.pdf.

utilities), and scope 3 (indirect emissions from an organization's operations, i.e., in the organization's supply chain or as a consequence of using an organization's products and services). Emissions tied to a financial institution's balance sheet—e.g., those resulting in part from a credit union's loans or investments—can be classified as scope 3 emissions. The GHG Protocol also provides free, online tools to help organizations estimate scope 1, 2, and 3 emissions.[55]

PCAF provides models and case studies for financial institutions like credit unions to use in calculating balance sheet or financed emissions linked to mortgages, vehicle loans, commercial real estate, and several other asset classes.[56] Clearwater Credit Union and Vancity both have disclosed the results of their 2020 GHG emissions analysis, and Clearwater has published an extensive methodological appendix that can be leveraged as a model for other credit unions.[57]

FIGURE 5

CLEARWATER CREDIT UNION OPERATIONAL AND BALANCE SHEET GHG EMISSIONS, 2020



	Size	Percentage of class covered	Scope 1 and Scope 2 emissions	Scope 3 emissions	Intensity	Data quality
Asset class	(million $)	(%)	(t CO_2e)	(t CO_2e)	($\frac{t\ CO_2e}{million\ \$}$)	(1 = highest 5 = lowest)
Business loans	52	39	3,047	–	148	4.38
Commercial real estate	105	96	3,246	–	32	4.66
Listed equity and corporate bonds	0	100	0	–	0	n/a
Mortgages	293	100	2,637	–	9	4.50
Motor vehicles	91	91	18,700	–	211	2.02
Project finance	8	100	1,967	–	254	5.0

Source: Clearwater Credit Union. "2020 Environmental Impact Assessment." clearwatercreditunion.org/files/2022/02/2020EIA.pdf.

FIGURE 6

VANCITY BALANCE SHEET GHG EMISSIONS DISCLOSURES, 2020

Financed emissions—initial analysis (tonnes CO_2e)

Asset class	Dollar invested (millions)	Total tCO_2e	tCO_2e/dollar invested	Percentage coverage	Data quality score[1]	Total $ in asset class
Residential mortgages	12,892	31,162	2.4	98	5	13,121
Business and commercial real estate mortgages	5,468	52,528	9.6	88	5	6,236
Motor vehicle loans	20	3,527	179	100[2]	5	20
Business loans (general purpose)	227	18,097	80	92	5	246
Consumer loans[2]	Excluded—no methodology exits yet					312
Total—loans	**18,607**	**105,314**	**5.6**	**93**	**5**	**19,935**
Vancity Investment Management mutual fund sub-advisory for instance socially/ responsible funds	1,150	41,618	36	93	3	1,234
Vancity Investment Management—private assets under management[3]	314	12,262	39	97	3	324
Total—investments	**1,464**	**53,880**	**36.8**	**94**	**3**	**1,558**

Estimated emissions calculated using the PCAF Global Standard.

1 The best data quality score is 1 and the worst is 5.
2 Some consumer loans are used to purchase vehicles, but we do not have comprehensive tracking for all these loans.
3 Investments do not include bond or other non-equity holdings.

Source: www.vancity.com/AboutVancity/News/MediaReleases/VancityDisclosesCarbonFootprint/.

Mapping the Drivers and Transmission of Climate Risk in Financial Services

There is a burgeoning field of research seeking to identify the specific drivers and transmission channels of climate risk for financial institutions. The Basel Committee on Banking Supervision argues usefully that the specific physical and transition risks associated with climate change can be mapped to traditional financial institution risk categories.[58] In interviews for this research, some credit union system leaders suggested a similar approach could be leveraged to incorporate climate risk assessment into the NCUA's existing CAMELS framework (CAMELS = capital adequacy, asset quality, management, earnings, liquidity risk, and sensitivity to market risk).

FIGURE 7

CLIMATE RISKS IN TERMS OF FINANCIAL INSTITUTION RISK CATEGORIES

Risk	Potential effects of climate risk drivers (physical and transitional risks)
Credit risk	Credit risk increases if climate risk drivers reduce borrowers' ability to repay and service debt (income effect) or credit unions' ability to fully recover the value of a loan in the event of default (wealth effect).
Market risk	Reduction in financial asset values, including the potential to trigger large, sudden, and negative price adjustments where climate risk is not yet incorporated into prices. Climate risk could also lead to a breakdown in correlations between assets or a change in market liquidity for particular assets, undermining risk management assumptions.
Liquidity risk	Credit unions' access to stable sources of funding could be reduced as market conditions change. Climate risk drivers may cause credit unions' counterparties to draw down deposits and credit lines.
Operational risk	Increasing legal and regulator compliance risk associated with climate-sensitive investments and businesses.
Reputational risk	Increasing reputational risk to credit unions based on changing market or consumer sentiment.

Source: Basel Committee on Banking Supervision. 2021. "Climate-Related Risk Drivers and Their Transmission Channels." Bank for International Settlements. www.bis.org/bcbs/publ/d517.pdf.

It also is important to understand how climate risks are transmitted through the financial system directly and indirectly, affecting individual financial institutions and potentially leading to financial system instability.

The Uncertainties of Climate-Related Risk

Credit unions, like all financial institutions, are in the business of managing risk. But as the New York Department of Financial Services has recognized, climate-related risks are distinctive in their uncertainties.[59] Unlike many other risks with which credit union leaders will be familiar, climate physical and transition risks are:

- Far-reaching and potentially irreversible, thus requiring a more precautionary approach.
- Foreseeable but uncertain in timing, extent, and intensity, in that while some level of climate change is now inevitable—essentially "locked in" due to the current concentration of GHGs in the atmosphere—the exact outcomes of that change are nonlinear and not certain. For example, the climate transition might be orderly or disorderly, generating more disruption; impacts might be geographically widespread or more concentrated; exposure to physical hazards might grow, and/or the hazards themselves also might become more intense, making risk harder to account for.
- Hard to predict based on past experience. In the case of climate change, because of the uncertainties in how nonlinear impacts will unfold, historical trends do not predict the future well.[60]

FIGURE 8

CLIMATE RISK TRANSMISSION CHANNELS

Sources: Figure adapted from Network for Greening the Financial System. 2019. "A Call for Action: Climate Change as a Source of Financial Risk." www.ngfs.net/sites/default/files/medias/documents/ngfs_first_comprehensive_report_-_17042019_0.pdf and Basel Committee on Banking Supervision. 2021. "Climate-Related Risk Drivers and Their Transmission Channels." Bank for International Settlements. www.bis.org/bcbs/publ/d517.pdf.

- Dependent on near-term actions. The full and ultimate impact of climate change is dependent on actions taken in the near term to transition to a net zero carbon economy and prepare for impacts.
- Liable to worsen as the resources historically used to manage risk become less available or applicable. These resources include, crucially, private insurance, reinsurance systems, and public support and share social safety nets, including FEMA disaster relief. But these resources may not always provide the backstop they have offered in the past. Insurers like AIG and Chubb are pulling out of California markets where they have judged the fire risk too high.[61] Indeed, for lenders, too, assets long considered safe collateral due to calculations assuming insurance in the case of default may not be so safe without it; loss from default might be a more appropriate perspective than simply the probability of default.

Ultimately, uncertainty over the specific impacts of climate change is not a reason to avoid action but, in fact, a good reason to begin building a clearer picture of climate risks for credit unions.

What Can Happen When We Don't Account for Risk

Systemic Risks Are the Biggest Concern

According to findings from the U.S. Commodity Futures Trading Commission:

> *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.*[62]

But Even Subsystemic Risks Can Cause Big Problems

Subsystemic risks are those that affect a geographic region, an asset class, or a sector. It might seem logical to assume that subsystemic risks tend to be less of a concern, but that is not necessarily true. For instance, 31 counties, which represent just 1% of all U.S. counties, generated one-third of U.S. gross domestic product.[63] Extreme weather events concentrated in these subsystemic areas could thus translate into systemic-level shocks.

Credit Union Asset Categories That Could Be at Risk

The combination of physical and transition risks could expose credit unions in a wide variety of areas. The U.S. Commodity Futures Trading Commission has outlined some of the core asset categories of financial institutions exposed to climate-related risk, from those assets tied to real property or infrastructure to those assets linked to sectors likely to be impacted by climate transitions.[64]

Individual credit unions are unlikely to be exposed in all of these categories, but the concentration of their activity in particular asset classes requires attention. Impacts on credit unions also may be more indirect, related to the close ties many credit unions have with potentially impacted communities. Credit unions might, therefore, see the following kinds of risks emerge:

FIGURE 9

CATEGORIES OF FINANCIAL ASSETS EXPOSED TO CLIMATE CHANGE IMPACTS

Categories	Examples
Financial assets directly tied to real property	• 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	• 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 transitional risk	Equities and debt of firms in the following sectors: • 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	• Insurance and reinsurance company debt and equity • Insurance-linked securities (ILS)
Financial assets tied to streams of government revenue	• Municipal bonds • Sovereign bonds

Source: Commodity Futures Trading Commission, "Managing Climate Risk in the U.S. Financial System," 2020. 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.

- Impacts of severe weather events on standard clearing and settlement activities and the demand for cash.
- Loss of value of collateralized assets.
- Loans in their mortgage portfolios or commercial lending portfolios that become uninsurable because of their location, impacting both the cost of ownership and the risk profile of existing loans.
- Properties in their loan portfolios whose value does not align with market value given a climate-related reset.
- Retail members who have lost their jobs because their employer or industry has had a direct physical loss due to a weather-related catastrophe or is struggling because of climate-related transitions, directly or as part of the supply chain.
- Potential loan losses from business interruptions, and bankruptcies, and business members whose facilities have been shuttered by physical or transition risk.
- Risks from member business activities that have a high exposure to climate risk.

Like all financial institutions, credit unions work closely with insurers to manage known risks, such as those associated with natural disasters, and insurers are seeking to adapt quickly as concerns over climate change grow.[65] Credit unions may be able to work with insurers to account for some of the risks on their balance sheets. Yet as a pilot stress test exercise by the Bank of France showed, efforts to transfer risk through the insurance industry may not be able to guarantee the security of credit union members, since insurers may simply seek to raise premiums or withdraw from certain risky markets.[66] Credit unions may also wish to engage in risk modeling anyway to ensure they can respond appropriately in case rapid action (such as rolling off risky loans or diversifying their portfolios) is required, or in case the expected recovery of the underlying collateral of a loan drops to zero due to an acute climate emergency.

As discussed later in this report, climate-related risk data and measurement are complex, but resources are quickly growing to support credit unions as they seek to measure and mitigate climate change risks.

Opportunities for Credit Unions

While the transition to a net zero emissions economy holds risks for unwary financial institutions, it also offers up many opportunities. As fiduciaries, credit union directors are mandated to act on behalf of their members and to take into account members' well-being alongside the sustainability and growth of the cooperative. This dual or hybrid incentive structure is core to the credit union difference. It is logical and reasonable for credit unions to seek to understand, measure, and manage the risks associated with climate change's detrimental effects, now and in the future. At the same time, there is research to support the business value of tackling climate change. As the TCFD reports, "while changes associated with a transition to a lower-carbon economy present significant risk, they also create significant opportunities for organizations focused on climate change mitigation and adaptation solutions."[67]

Given the appropriate growth mindset, credit unions have several opportunities to act on climate change trends sustainably. This research identifies five unique opportunities for credit unions to explore: differentiation in competitive markets, new products and services, talent attraction and retention, operational efficiency, and cooperative values.

Differentiation and Competition

Increasingly, private-sector business leaders are vocally acknowledging those opportunities and encouraging businesses to embrace them. Perhaps most notably, Larry Fink, Blackrock's chief executive officer (CEO), wrote in his 2021 letter to shareholders that he "believe[s] the climate transition presents a historic investment opportunity."[68] Blackrock is the world's largest investment management firm, with over $10 trillion in assets under management,

and so action by Blackrock on climate change has the potential to move and make markets. Fink continues,

> *There is no company whose business model won't be profoundly affected by the transition to a net zero economy. [...] As the transition accelerates, companies with a well-articulated long-term strategy, and a clear plan to address the transition to net zero, will distinguish themselves with their stakeholders—with customers, policymakers, employees, and shareholders—by inspiring confidence that they can navigate this global transformation. But companies that are not quickly preparing themselves will see their businesses and valuations suffer, as these same stakeholders lose confidence that those companies can adapt their business models to the dramatic changes that are coming.*

The climate transition presents a historic investment opportunity.

Fink is pointing in part to the opportunity for businesses to act strategically in a shifting marketplace to differentiate themselves from their competitors. Because of their history as mission-driven community financial institutions, credit unions are well-positioned to embrace this differentiation opportunity.

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For example, one of the most successful newly chartered credit unions has carved out a unique and defensible market position by focusing specifically and explicitly on environmental sustainability and climate change. Chartered in 2017, Clean Energy Credit Union remains small, ending 2021 with almost $30 million in assets. But the organization has grown significantly in a short period of time; from 2020 to 2021, membership grew 80% (from ~2,800 to 5,100), total assets increased 58% (up from $18 million in 2020), total loans grew by almost 65%, and total revenue rose by over 18%—significantly outpacing not only similarly sized credit unions but most credit unions of any size. CEO Terri Mickelsen says that much of this growth is due to consumer demand for a credit union focused on clean energy and the environment.[69]

Other credit unions are incorporating climate change initiatives into even more comprehensive action on ESG practices. One of the credit union leaders interviewed in the course of this research, an executive at a multibillion-dollar credit union, told us that although the current state of ESG at the credit union is minimal, they see ESG as a potent differentiator in the future and have invested in a strategy to map its growth.

ESG, like risk management and product development, may be a natural home for credit union climate change efforts. Moreover, as one recent *Harvard Business Review* article argued, an "ESG reckoning" may be coming for companies of all stripes. For while "the push in recent years for companies to commit to ESG efforts is commendable [. . .] so far, those efforts have yielded scarce results."[70] Increasingly, consumers, employees, and other stakeholders are putting pressure on companies to be more accountable on ESG issues; certain types of companies (initially publicly traded firms) soon will be required to report on ESG impacts through internationally recognizable standard setting agencies, leading to growth in an ESG supplier and consultancy ecosystem; and companies ahead of the ESG curve are beginning to gain benefits against their competitors who are weaker on ESG indicators.

As interviewees in this research noted, some credit unions are more advanced on the "social" and "governance" aspects of ESG, with significant social impact initiatives already in place and a long history of robust practices in cooperative governance. Although the "environment" portion is currently the weakest link, it does not need to be, as credit unions already have a leg up over other financial institutions through their existing investments in financial well-being for all, DEI, and community social impact.[71] Indeed, since the risks of climate change fall disproportionately on disadvantaged and vulnerable populations, especially low and moderate income communities and BIPOC communities; acknowledging these emerging inequities allows credit unions to connect their growing commitment to DEI with action on climate change.[72]

Credit unions often struggle to differentiate themselves from competitors, with limited remaining upside for the traditional drivers of differentiation in financial services (especially for smaller organizations): price, convenience, and service. More than one interviewee noted the opportunity for credit unions to be a leader in the ESG space for financial institutions. Action on climate change sits at the heart of that opportunity.

New Products and Services

The most straightforward way for credit unions to realize the business opportunities associated with climate change is to leverage their traditional business model of consumer (and, for some, commercial) financing.

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Decarbonization and the transition to a carbon-neutral economy will require massive investments of trillions of dollars in climate change solutions: new technologies, consumer goods and support, new and renovated or retrofitted buildings and infrastructure, and more. Credit policy and "green financing"—that is, channeling "financial flows [...] from the public, private, and not-for-profit sectors to sustainable development priorities"—will fuel this growth, offering opportunities for financial institutions and lenders.[73] What will result, in essence is the creation of new lending markets.

Take, for example, the growing market in solar energy. The National Renewable Energy Laboratory found that since 2005, when Congress passed the investment tax credit, the number of residential photovoltaic (PV) systems installed annually has grown by approximately 32% per year, or by about 60X. At the end of 2020, there were approximately 2.7 million residential PV systems in the United States.[74] The Inclusiv Center for Resiliency and Clean Energy estimates that as of June 2021, there are already 376 community financial institutions—including 281 credit unions—involved in green lending.[75]

Or take the similarly explosive market in electric vehicles (EVs). While still a small segment of the total automotive market, sales of EVs have surged to all-time highs in 2020 and 2021, tripling their market share over two years.[76] Similarly, EV loans accounted for 4.6% of new vehicle financing in 2021, double the share in 2020 and up from 1.3% in 2019. Yet credit unions have only a small sliver of the market in EV lending—around 12% versus 56% for banks.[77]

What could financing the climate transition look like at a typical credit union? On the consumer front, green products might include the following:

- Auto loans for electric and clean energy vehicles.
- Home loans to install solar electric systems and make energy efficiency upgrades and other green home retrofits.
- Green savings accounts, which leverage deposits to invest in climate-friendly investments or directly in renewable energy and other climate adaptation projects, such as community solar or disaster preparedness initiatives.
- Green credit cards (for instance, those that reward members for purchasing eco-friendly products and services from participating businesses).

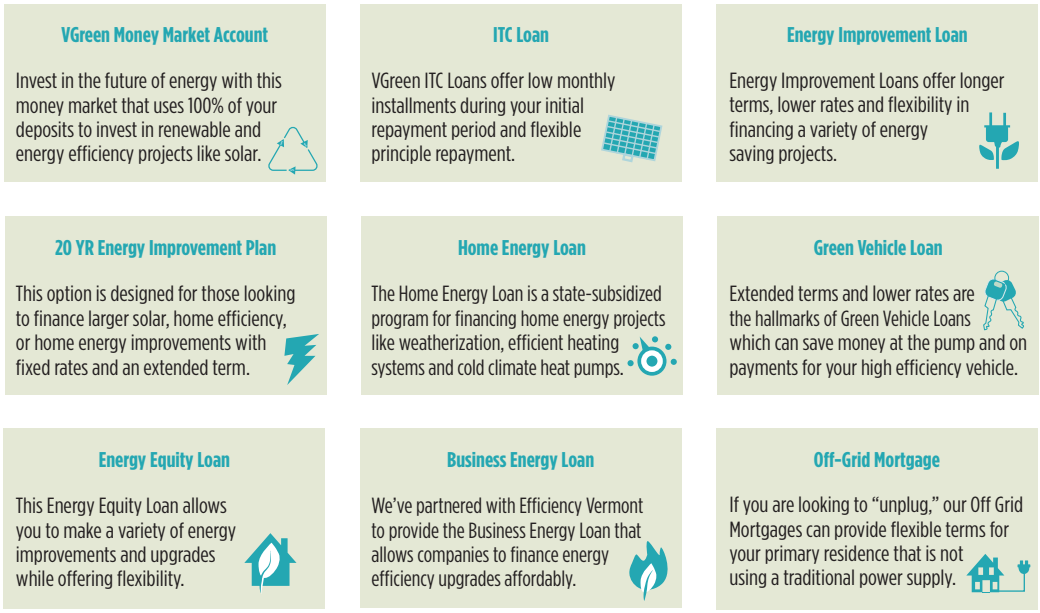
On the business side, credit unions could focus on providing business services, loans, and investments to businesses and nonprofit organizations seeking to offer green products/services, improve the energy efficiency of their facility or processes, build energy-efficient new homes or business spaces, or develop larger-scale sustainable energy and climate adaptation projects.

VSECU, a $1 billion credit union in Vermont, offers a compelling and wide-ranging case for what such a product portfolio might look like for credit unions. With a diverse suite of lending and savings products, including discounted rates and flexible terms, VSECU also has developed solutions specific to the geography and membership they serve. Offerings such as their VGreen ITC Loan and Energy Improvement Loan support energy efficiency upgrades and solar power installations. VSECU also leverages partnerships. Their Home Energy Loan, for example, brings in Efficiency Vermont (an energy efficiency utility) and funds from the state to help lower interest costs for low-to-moderate-income borrowers. This matching of specific community energy or environmental need to innovative product solution is a model for other credit unions to follow.

For credit unions looking to learn and gain experience in building out green offerings, some organizations are getting their feet wet by buying green loans originated by other organizations.[78] In 2020, for example, Clean Energy Credit Union sold $21.7 million in loan participations to other financial institutions.[79]

FIGURE 10

VSECU "VGREEN" PRODUCT SET



Source: VSECU. "VGreen Solar Loans and Energy Efficiency." www.vsecu.com/financial/clean-energy-loans/about.

Talent Attraction and Retention

Differentiation is just as important for attracting and retaining talent as it is for attracting and retaining members. Previous research on the "war for talent" in credit unions has found that the social mission and community connection of credit unions is a powerful differentiator for workers, especially young staff.[80] Many interviewees participating in this research noted the positive relationship between strong sustainability and environmental practices with talent attraction and retention. One industry survey found that 65% of employees are more likely to work for a company with robust environmental policies.[81] This differentiator will be strongest for younger generations: Deloitte's survey of millennials and Gen Z finds an overwhelming focus on the social impact of businesses, with climate change front and center alongside wealth and income inequality and systemic racism.[82]

Operational Efficiency

As this report discusses in chapter 4, most credit union activity in relation to climate change is currently focused on greening internal operations through either long-term investments in green energy or programming to reduce waste and use of resources (e.g., transitioning from paper-based operations to digital operations). For instance, Vancity, largely regarded as a leading voice in environmental sustainability in credit unions, reports that the organization has sought to make operations more energy efficient through "preventative maintenance, energy efficient lighting, heating, ventilation, and air-conditioning upgrades, system and building envelope improvements."[83] Many credit unions have undertaken similar efforts, often looking to LEED-certify their buildings. Although these scope 1 contributions to the climate are relatively small, operational investments can be important as a preliminary first step for credit unions, and they can produce savings. Suncoast Credit Union, for example, saved around $2,800 per month in utility costs by installing solar panels at one service center.[84]

Cooperative Principles

U.S. credit unions, like other cooperatively owned businesses around the world, subscribe to the International Cooperative Alliance's (ICA) seven cooperative principles.[85] The ICA states a cooperative is "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise." The new economic, social, and cultural needs driven by climate change introduce new opportunities for credit unions to activate the cooperative principles, especially the seventh principle, concern for community: "Cooperatives work for the sustainable development of their communities through policies supported by the membership." As one interviewee explained, "As a cooperative we are bound by a 'concern for community' and the sustainability of our communities."

Fundamentally, external trends like climate change provide unique opportunities for credit unions to leverage their specific strengths—like the cooperative principles—to their advantage. Credit unions can show climate leadership as a differentiating opportunity in today's crowded financial services marketplace. In short, as collaborative research from European Investment Bank (EIB), the Global Alliance for Banking on Values (GABV), Deloitte, and KKS Advisors has shown, "the simultaneous pursuit of strategic sustainability priorities and strong financial performance does not conflict with one another but, rather, support each other when driven by consistent strong overall leadership." Indeed, in this research, financial institutions that consistently scored high on their efforts to address material ESG issues—including GHG emissions and climate change—*also* delivered higher risk-adjusted returns than those banks performing poorly on the same issues.[86]

CHAPTER 2

Where Are Credit Unions in Preparing for Climate Change?

In late 2021, researchers from Filene conducted structured interviews with 20 U.S.-based organizations, including federal and state-chartered credit unions, trade associations, industry experts and advisors, and other system partners and stakeholders. The purpose of these interviews was to gain a broad understanding of how the U.S. credit union system is currently viewing and/or addressing climate change as a risk factor and opportunity category. This chapter shares summary perspectives and thoughts on the current state of climate change from credit union executives and non–credit union organizations. It ends with examples from exemplar institutions.

General Credit Union Perspectives

Most credit union organizations interviewed were in the very beginning stages of their thinking on the topic of climate change. As one interviewee stated, "[We are] not even crawling. [We are] in the infancy stage." This perspective was not meant to mitigate the importance of climate in their business strategy; it was, rather, an acknowledgment that the topic is just starting to be "considered and acted upon as an input to strategy."

When queried about examples of how their organization is starting to act upon climate change, most interviewees referred to a focus on greening their internal operations. Examples of activities included LEED certification of facilities, granting employees money to use public transit, and instituting the use of geothermal and other alternative energy sources. Beyond internal operations, some credit unions identified the gradual integration of environmental sustainability into their ESG strategies, especially among the larger institutions interviewed. However, there were no clear patterns of activities, only unique examples for each institution. For instance, one credit union talked about how they created a "Green Team" composed of credit union staff to identify impact areas, which has led to partnerships with a local land trust and an environmental institute.

The CEO of a multibillion-dollar credit union in the southern United States shared a list of internal projects they have implemented to "green" their operations:

Reduced Power Consumption

- LED lights for all interior and exterior applications at the new branches.
- Replacing fluorescent, incandescent, high-pressure sodium (HPS), and metal halide (MH) lamps with LED equivalent where possible.
- Building signage conversion to LED.
- Installing motion sensors in the offices and bathrooms to turn the lights off or on according to whether the space is occupied.
- Replacing timers for exterior lights with photocells so lights are on only at dusk.
- Applying reflective coating to the roofs to reduce heat absorption, therefore reducing load on the HVAC equipment.
- Replacing old HVAC units with higher efficiency units.

Reduced Water Consumption

- Installing low-flow toilets and urinal flush valves.
- Landscaping improvements planned for 2022, including synthetic turf in certain areas to reduce water consumption for irrigation. (LEED certification)

A focus on Operations (or scope 1 emissions) only is, ultimately, a limited and ineffective way to approach climate change for a financial institution. Some credit union leaders interviewed for this research acknowledged as much, saying that they understood most of the GHG emissions linked to financial institutions are reflected on the balance sheet in terms of the activities of members at work and home. While still recognizing the progress their institutions have made on operational efficiency and sustainability, many turned questions around to the researchers to ask how to better focus on mitigating balance sheet risks and greening their portfolios. This is an honest reflection of the distance between current actions and where we need to be.

Finally, there was a common thread among some interviewees who spoke of environmental sustainability issues as tightly connected to DEI and community social impact efforts and as a human capital strategy. Regarding DEI, there was an acknowledgment that climate events will disproportionately impact minority populations; thus, climate change is a lens of analysis needed on this topic. In terms of human capital, more than one interviewee characterized environmental sustainability initiatives as a talent attraction and retention tool, especially for younger staff members.

What Are the Roadblocks to Progress?

When queried about strategic changes related to climate change, most interviewees deferred by saying they had not yet integrated this topic into their near-term plans. Some potential impact areas were offered up, with credit unions stating that institutions engaged in agricultural lending may be seeing the impacts of climate change (and associated strategy) shifts more than consumer lending entities. However, most interviewees indicated an almost reactive stance toward climate change, such as "slow walking" environmental sustainability until the system aligned around a shared approach or clear guidance was obtained from regulators on how to measure this risk factor. This captured the essence of the primary roadblock faced by credit unions: the lack of urgency, due in many cases to lack of awareness.

This lack of urgency is reflected in how credit unions currently model risks and opportunities related to climate change. When it comes to risk, climate change is just starting to become part of the enterprise risk management framework for some credit unions, but according to most interviewees, the level of analysis is relatively minor and usually prompted by the presence of acute weather events and disasters in their region. Other credit unions are monitoring climate change risk through the lens of people's changing commuting habits, which correlates to potential risk in automobile, residential, and commercial (real estate) lending. For example, financial institutions will need to understand new models of climate risk in the underwriting process, how their partners in the mortgage process (e.g., government lending facilities, insurance companies, etc.) assess and insure risk, and

how consumers view such topics as climate (and moral hazard) in their home purchase decisions. Ultimately, however, current risk modeling for most interviewees culminated in discussing efforts around mitigating operationally focused risks and costs (e.g., energy and paper use).

A lack of urgency also was present when considering opportunities for credit unions around climate change. Frequently mentioned were solar installation financing and other energy efficiency loans (e.g., upgrading homes and fuel-efficient automobiles). Also frequently shared were internal, operational efficiency opportunities such as working with local utility companies on green energy. And although some interviewees mentioned environmental sustainability as a strategic differentiator in the eyes of consumers, few had actually taken action on this opportunity in their organization.

The perspectives of non–credit union interviewees matched those of credit union professionals. They shared the belief that credit unions lack urgency when it came to climate change. The threat, as one interviewee shared, was credit unions being too complacent in the face of an obvious, slow-moving threat resulting in "a significant disruptor" to their business. At this point, interviewees believed the link between credit union strategy and environmental sustainability was likely more location specific.

What Will Drive Change?

Researchers pushed interviewees to identify the right motivators and contexts for action on climate-related risks and opportunities. Ultimately, both credit union leaders and non–credit union system leaders argued it would likely be external factors that would drive strategy change among credit unions, specifically consumers and regulators.

Some argued that it would be changing consumer preferences that ultimately moved credit unions to act. One system leader urged credit unions to better understand where the consumers' minds were on the topic, making a strong case for letting the consumer lead the credit union.

Many interviewees pointed to regulator involvement as a prime mover for credit unions, suggesting that unless regulators push credit unions toward specific actions, there might not be much industry action. These interviewees acknowledged regulation related to climate change is likely coming to credit unions; most thought the time frame for climate-related regulation was around five years. Interviewees also believed regulation would likely start at the state level and that any federal action will be highly dependent on "who's in power." Many interviewees mentioned the NCUA's desire to protect the insurance fund as a key driver for any future regulatory involvement. If this turns out to be the case, interviewees believe regulations will likely begin with a request for information and focus,

at least initially, on risk management and stress testing. There was some concern around carbon taxes or other climate-related taxes down the road.

In short, far from a taboo subject, regulation often was foremost on interviewees' minds. Credit union leaders interviewed for this report wanted more information about regulation and sought, unprompted, to think with researchers about how a potential regulatory regime might productively take shape. In what follows, this report digs further into the state of consumer finance regulation around climate change. The goal is *not* to lay out a regulatory agenda but, following the lead of those interviewed for this research, to start a conversation.

Regulation

It is unlikely that many credit unions will be clamoring for regulation related to climate change or any other emerging issue. Regulators should be prudent and balance the many possible benefits of climate risk management regulation with the cost of compliance, especially for smaller, more resource-constrained institutions.[87] Moreover, given the unique structure and incentives of credit unions, many credit union leaders argue that regulations must balance the needs of both large and small credit unions. Some argued that smaller credit unions would ultimately be unable to respond to regulatory mandates without concomitant support from regulators and system partners.

Nonetheless, interviewees for this research acknowledged—typically unprompted—that government action, whether legislative or regulatory, will likely define the consumer financial services landscape as it relates to climate change.

Regulators and the regulated have a unique relationship. Credit unions are provided a charter to operate by federal and/or state governments. With this charter comes certain powers and associated limitations. Ultimately, regulators are focused on the stability—the safety and soundness—of the financial system and the individual institutions that make it up. Any comments on climate change regulation are speculative, but interviewees expressed hope that they would be helpful in creating an environment in which regulators and the regulated can have open conversations about risks, their measurement and management, and about the need for approaches tailored to credit union size. One interviewee voiced the hope that most had about regulation:

> *We want to engage in the conversation to make this arrangement productive. As credit unions we want to do our part, but unsure what it is going to look like. As a cooperative we are bound by a concern for community and the sustainability of our communities, so expect it [climate change] to be a "when" and "how," not "if" regulators will get involved.*

There is a clear approach emerging among credit union stakeholders: to tailor risk management approaches to the diversity of the credit union system while—perhaps most importantly—investing in the coordinated and collaborative development of collective resources to support credit unions as they seek to mitigate risk and prepare themselves to support their communities in the face of climate change.

Regulatory Developments

The most significant regulatory development around climate risk management and financial services is the October 2021 FSOC report identifying climate change as an emerging and increasing threat to U.S. financial stability. That report, developed in response to an executive order in May 2021, is the first time U.S. financial system regulators have spoken so definitively and in one voice about climate change. It also identifies four areas where it encourages FSOC members—including the NCUA—to act: building capacity and expertise, filling climate-related data and methodological gaps, enhancing climate-related disclosures, and assessing (in order to then mitigate) climate-related risks.

At the time of writing this report, the SEC's Enhancement and Standardization of Climate-Related Disclosures had been released (and was open for public comments until May 20, 2022). If approved, in addition to enhancing corporate transparency, this rule would aid in the filing of the data gaps mentioned in the FSOC report. It is important for credit unions to note that, although there are currently a limited number of climate change regulations in place for U.S. financial institutions, the momentum in the United States is definitely changing. Some key developments include the following:

- As stated in the FSOC report, "as their understanding of climate-related financial risks develops, depository institution regulators are assessing whether any policy actions, specific regulations, or principles-based supervisory guidance in response to the financial risks of climate change should be adopted."
- Subsequent to this, in March of this year, the Federal Deposit Insurance Corporation (FDIC) issued a proposal and request for comment on its draft Principles for Climate-Related Financial Risk Management for Large Financial Institutions.[88] This is in addition to the Office of the Comptroller of the Currency, who issued similar draft climate principles for large banks in December 2021.[89]
- Leaders at the U.S. Federal Reserve have indicated repeatedly and consistently that oversight on climate-related risks falls within the purview of financial system regulators, and in late 2020, the Federal Reserve joined the Network of Central Banks and Supervisors for Greening the Financial System.[90]

- The Fed has established two committees to study the risks of climate change, one focused on impacts on national economic stability and other on impacts to individual financial institutions.[91]
- Both Chairman Jerome Powell and Board Governor Lael Brainard (nominated in November 2021 to be Fed vice-chair) have spoken about the possibility that the Fed may conduct scenario analyses of climate risks at the system level and for individual institutions.[92]
- There were reports in November 2021 that Fed supervisors already have started conversations with banks to begin collecting data to assess the exposure of their loan portfolios to climate risks.[93]

In addition to work at the Fed, a number of other financial system regulators have established working groups (e.g., at the Consumer Finance Protection Bureau, the Federal Housing Finance Authority, the Commodity Futures Trading Commission,[94] and the Office of the Comptroller of the Currency). Moreover, some state regulators are leading the pack. The New York State Department of Financial Services and the Washington State Department of Financial Institutions, for example, have outlined their expectations for state chartered financial institutions' disclosures on climate-related risk.[95]

Finally, international standards setters also have begun to take action. Climate change does not stop at a country's border. While this report focuses on climate risks related to U.S. credit unions, it is important to understand the evolving landscape of international standard setters as a potential prelude to climate change regulatory guidance. In late 2021, for instance, the International Financial Reporting Standards (IFRS) Foundation, which governs financial reporting in more than 140 countries, announced the formation of an International Sustainability Standards Board to develop a global baseline of sustainability disclosure.[96] On March 31, 2022, IFRS announced the release of the first exposure drafts of proposed standards for company sustainability and climate related disclosures by its International Sustainability Standards Board (ISSB).[97] Closer to the U.S. credit unions' universe, the Bank of International Settlements (BIS) has a working committee to develop 18 principles for the effective management and supervision of climate-related financial risks, 12 aimed at large banks and six specific to banking supervisors.[98] However, as credit unions understand from past experience, guidance formed in Basel by the BIS can and does trickle down to smaller institutions and their regulators.

The NCUA

While the NCUA has not made official pronouncements as an institution, Chairman Todd Harper has reflected often on the risks of climate change and the role of the NCUA with regard to those risks. According to Harper, NCUA can fulfill its safety and soundness obligations in part by confronting the risks presented by climate change. For example,

in August 2021, Harper delivered extensive remarks to the U.S. Senate Banking, Housing, and Urban Affairs Committee, providing details on the NCUA's potential oversight role in relation to climate change:

> *Financial regulators, like the NCUA, have a responsibility to foster resilience to all material risks to financial institutions, including those related to climate change. By measuring, monitoring, and mitigating such risks, the NCUA can fulfill its core obligations of maintaining the safety and soundness of credit unions, protecting consumers, and safeguarding the Share Insurance Fund.*
>
> *The NCUA will continue to examine the effects of climate financial risk on the credit union system and on other areas of the financial sector. The agency will also continue to engage with other regulatory agencies as part of the Financial Stability Oversight Council and other interagency working groups on the issue of climate financial risk within the broader financial system and economy.*[99]

In November 2021, Harper described climate change as a "material risk" in the context of the NCUA's long-term strategic vision:

> *As a regulator and insurer, the NCUA will continue to work to ensure that the institutions it oversees remain resilient against all material risks, including climate financial risk. As such, the NCUA is studying the risks to collateral, held for security on a loan, exposed to climate-related natural disasters in order to understand the risks associated with an increase in those extreme weather events on the credit union system. In its oversight, the NCUA would evaluate whether credit unions are addressing those risks. By managing the risks on their balance sheets, credit unions will remain viable and support broader U.S. economic growth.*[100]

Finally, in a speech in December 2021, Harper provides some additional detail about how the NCUA is looking at the specific ways climate change risk may manifest for credit unions:

> *In my role as Chairman of the NCUA and as voting member of the Financial Stability Oversight Council, I believe it is imperative that regulators address the financial risks related to climate change and manage that risk within appropriate regulatory and supervisory frameworks. […]*

Additionally, regulatory agencies should consider not only the macroeconomic impact of climate change, but also the microeconomic context. Most credit unions, for example, focus on mortgage, auto, and small business lending. But over time, climate financial risks will affect the value of collateral like homes and commercial properties and vehicles, especially in areas affected by extreme weather and as we transition to electric and hybrids.

Additionally, a credit union's field of membership is often tied to a specific business, like an oil refinery or manufacturing facility, or a community linked closely to farming or centered in specific geographic areas. The movement to renewable energy and changes in weather patterns will affect their operations. To remain resilient, such credit unions should consider adjusting their fields of membership or altering their lending portfolios.[101]

Finally, the NCUA addressed climate-related financial risks in its 2022–2026 Draft Strategic Plan, noting that "the agency will need to adapt its risk monitoring framework to account for climate-related threats to financial stability, the credit union system, and the Share Insurance Fund."[102] Ultimately, the NCUA revised its strategic plan to clarify that the agency would not take regulatory action based on climate-related financial risks. Several credit union leaders responded publicly in support of this decision.[103]

Productive Conversations

Ultimately, credit union leaders and system professionals interviewed for this research sought to share ideas around a potential climate regulatory regime that would appropriately assess risk factors while also providing incentives and flexibility for credit unions that are proactive on the climate change topic. The hope among many interviewees was that promulgated regulations would be focused on risk management and have incentives for "good" practices. To this end, we note that incorporating effective climate risk management into a credit union's enterprise risk framework would not require "reinventing the wheel"—and it is possible to update the existing CAMELS framework to incorporate this additional risk vector.

The intersection of vulnerable communities and climate change also rose to the top as an important consideration in any future regulatory structure. Interviewees emphasized how education and open communication are keystones to creating a safe, sound, and productive regulatory environment. The recent New York State Department of Financial Services' roundtable on climate change was identified as an example of what these

productive discussions might look like going forward—not heavy-handed but open, transparent, and dialogical.[104]

There also were acknowledgments that, no matter what the regulatory environment ultimately looks like, collective resources will be needed for credit unions to authentically engage in the kinds of risk measurement and mitigation needed. The Inclusiv Center for Resiliency and Clean Energy was acknowledged on more than one occasion as just such a productive training and education resource.

Exemplary Organizations

The purpose of the interviews was to gain an approximation of the industry's perspectives on climate change risks and opportunities, and to accomplish this task, researchers interviewed a wide range of organizations and individuals. Included in this group were organizations that had made significant contributions to this topic. This section highlights four organizations as a means to illustrate how climate change is interpreted and operationalized in a host of settings.

Clean Energy Credit Union

The Clean Energy Credit Union (www.cleanenergycu.org) was chartered in 2017 to "promote clean energy, environmental stewardship, and cooperative enterprises through the financial services we provide to our members."[105] After only a few years in existence, Clean Energy has grown to almost $30 million in assets, with a loan portfolio that focuses only on clean energy initiatives such as residential solar loans, residential geothermal system loans, green home improvement loans, and a variety of clean energy transportation loans (e.g., e-bikes, electric vehicles, etc.).

Terri Mickelsen, Clean Energy's CEO, states, "We are uniquely positioned to surf the climate change trends because we were organized by a group of clean energy geeks. This is our foundation." Clean Energy has plans for significant growth over the next decades as both a provider of direct-to-consumer financing on clean energy loans and also as a potential resource for other credit unions wishing to get deeper into this market. However, Mickelsen shared her concern for traditional credit unions getting too deep into clean energy too soon, warning that there is "so much paperwork involved in clean energy financing today. I'm not sure it will scale with larger institutions." Instead, Mickelsen imagined a world much like indirect automobile lending, which turns green lending into a utility where the workflow is automatic for the credit union and a good user experience for members. Mickelsen says competition from outfits like GoodLeap and Mosaic offers vivid examples of what a credit union solution might look like.[106]

Clearwater Credit Union

Clearwater Credit Union (www.clearwatercreditunion.org) is a $850 million, 55,000-member credit union situated in and around Missoula, Montana. Clearwater is Montana's largest community development financial institution (CDFI) and has a mission to "be a force for good in banking, in the communities we serve, and in the lives of our members."[107]

In relation to environmental sustainability, Jack Lawson, Clearwater's president and CEO, feels "relatively speaking, we are a leader, but objectively we are still at step one." However, Clearwater's efforts are instructive for other credit unions interested in this topic:

- Clearwater periodically and publicly reports on their environmental sustainability initiatives with a specific focus on getting to a net zero carbon footprint.[108]
- Clearwater provides 5% of its annual net profits back to the community with one of the major focus areas being "protecting the environment."
- Clearwater designs green lending products.
- Clearwater is one of 183 financial institutions globally that participates in PCAF, an organization dedicated to "measuring and disclosing the GHG emissions associated with the lending and investment activities of financial institutions," thereby creating transparency and accountability and enabling financial institutions to align their portfolio with the objective to become net carbon neutral by 2050 or sooner.[109]

Lawson believes his modest assessment of Clearwater's progress is based on the fact that it is not difficult for financial institutions to conduct a few performative acts like getting business operations to net zero or building a LEED-certified headquarters building. The real barriers to progress, according to Lawson, are the lack of collective action and political power around the climate change topic. He does not castigate credit unions for not taking action, as he believes "credit unions are less inclined to advocate for policy change that is not in their zone." From Clearwater's own experience, Lawson knows the credit union cannot change the composition of their balance sheet from potentially GHG emitting products (e.g., automobiles, recreational vehicles, traditional homes) without demand from their 55,000 members.

Lawson also frequently mentions the importance of having a logic behind credit union environmental initiatives. Clearwater has embraced a "values-based" banking strategy, attempting to be—as their mission states—a force for good. Practically, this means Clearwater attempts to minimize their operational impact, collaborate through philanthropy, work to get sustainable assets on their balance sheet, and examine longer-term initiatives that support their mission, like financing larger clean energy projects in their community.

The Inclusiv Center for Resiliency and Clean Energy

The Inclusiv Center for Resiliency and Clean Energy (www.inclusiv.org/initiatives/center-for-resiliency-and-clean-energy/) was "designed to build a network of credit unions committed to jointly designing and scaling solutions to climate change, with a goal of promoting affordable and sustainable energy for all people."[110]

Neda Arabshahi, the center's director, says the project grew out of credit unions' acting as financial first responders around the country when their communities were hit by climate-related emergencies and disasters in recent years.[111] Since credit unions were already involved in the aftermath of these disasters, Inclusiv felt the center could help credit unions become proactive on the topic, which has resulted in increased community resiliency, reduction in GHG emissions, and increased access to affordable financing for clean energy projects. Arabshahi echoes others' perspectives that credit unions are just getting started on environmental sustainability initiatives and understanding climate change impacts to their model.

Nonetheless, the center has made significant progress in expanding the number of credit unions offering clean energy financing. For instance, their solar lending professional training and certificate program has trained over 202 individuals, representing 117 organizations. Despite the rigor of this program, the center has had to put interested credit unions on a waiting list due to overwhelming demand. Additionally, the center provides a variety of networking opportunities and workshops that support credit unions launching and growing their own green lending programs. The center also has worked on behalf of credit unions to advocate for favorable legislation that supports green lending programs. Finally, the center, in partnership with the nonprofit organization Inclusive Prosperity Capital and the University of New Hampshire's Carsey School of Public Policy, has begun to build out operationally important collaborative infrastructure tools to help credit unions scale their green lending. These include expanding Inclusive Prosperity Capitals' Smart-E green loan platform that brings together green loan software, networks of vetted community-based green building trade contractors/dealers, credit enhancement for low-income borrowers, and technical assistance for credit unions evaluating loan applications for green home upgrades.

United Nations Federal Credit Union

United Nations Federal Credit Union (UNFCU) (www.unfcu.org) is a credit union serving the needs of the United Nations' employees, contractors, and family members. UNFCU has $7.5 billion in assets and serves 175,000 members in over 200 countries. UNFCU offers a unique example of environmental sustainability since its main sponsor, the United Nations (UN), is a significantly important organization in defining sustainability goals across the globe. The 17 goals that comprise the UN Sustainable Development Goals (SDGs) "are the blueprint to achieve a better and more sustainable future for all. They address the

global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice."[112]

Prasad Surapaneni, UNFCU's chief information officer, stated that the credit union first began to focus on environmental issues with "a small internal green team 20 years ago." Today, Surapaneni says, sustainability is fully integrated into UNFCU's strategy due largely to the UN's SDGs. Since the credit union is so closely aligned with the UN, the introduction of the SDGs in 2015 was a clear opportunity for UNFCU to start their sustainability journey. Today, UNFCU maps all 17 SDGs to their organizational strategic plan. But while UNFCU's operations are unique, most credit unions would recognize its balance sheet as being relatively "normal." UNFCU lends primarily in the tri-state area around New York City (the UN's headquarters), with fairly traditional lending categories. They have been a scope 1 and 2 carbon neutral operation since 2016 and offer a handful of green lending products with fairly low volumes. Surapaneni extolled the virtues of sustainability for their members, the health of the planet, and, importantly, as a talent attraction and retention tactic.

While environmental sustainability is a significant portion of the SDGs, Surapaneni warns that sustainability is "more than just about climate change action." UNFCU views many issues holistically and as interconnected. For instance, DEI is tightly linked with climate change, as is hunger, nutrition, and access to clean water. What makes UNFCU so interesting is this holistic approach to sustainability and its tight linkages to the major influencers of the topic globally. UNFCU has leveraged this unique position to create the United in Sustainability Network, which aims to be a leadership and collaboration hub for credit unions interested in sustainability initiatives, and, since 2018, has hosted an annual summit for the benefit of all credit unions.[113]

CHAPTER 3

Measuring the Risks of Climate Change

Financial institutions are beginning to develop methodologies to quantify the physical and transition risks of climate change. However, measuring climate-related risks is complex and there are several challenges and factors to consider. This chapter discusses risk assessment methodology and provides key findings for at-risk credit unions. It also covers some

of the common limitations and regulations to consider and offers examples of cases and methodologies used by other institutions to calculate risk.

At-Risk Credit Unions: Methodology and Findings

This report offers a very preliminary assessment of the climate-related risks facing credit unions. Findings include the following:[114]

- There are more than 11,000 at-risk credit union branches located in 668 at-risk counties. Therefore, more than 60% of all U.S. credit unions and at least $1.2 trillion in credit union assets are at physical risk due to acute and chronic climate-related weather events and hazards.
- Credit unions whose fields of memberships (FOM) are most directly at risk of impacts from climate-related transitions are petroleum refining (specifically) and manufacturing and utilities (generally). Around 6 to 7% of federally chartered credit unions face high transition risks, representing more than $141 billion in assets. Manufacturing and utilities account for $130 billion in assets and petroleum refining represents $11.5 billion in assets.

Methodology

This report defines and assesses physical and transition risks using the National Risk Index (NRI).[115] Designed by FEMA, in collaboration with federal, state, and local governments, nonprofit organizations, academic institutions, and private industry, the NRI rates risks for U.S. counties and Census tracts for 18 natural hazards.[116] The overall Risk Index score (which is what this study uses) is a composite score for all hazard types and factors in scores for "expected annual loss," "community resilience," and "social vulnerability."

- Expected annual loss is a measure of the expected economic damage in dollars from natural hazards annually. Specifically, it calculates the anticipated loss of agriculture, population, and building value. In determining expected annual loss, annualized frequency is used for most hazard types. The natural hazard annualized frequency—the expected frequency of a hazard occurring each year—uses either recorded historical data or the modeled probability of a hazard occurring.
- Social vulnerability is the susceptibility of particular social groups based on demographic characteristics.
- Community resilience also uses demographic data to measure a regional community's ability to "prepare for, adapt to, withstand, and recover from the effects of natural hazards."[117]

This study selected at-risk counties from the most recent 2019 NRI with "relatively moderate," "relatively high," or "very high" risk ratings in comparison to the rest of the United States Researchers then identified at-risk credit unions and measured risks based on branch locations in counties and states. Financial estimates are retrieved from the National Credit Union Administration's June 2021 5300 Call Report data and the 2020 Home Mortgage Disclosure Act (HMDA) information, which is collected by the Consumer Financial Protection Bureau (CFPB).

Credit unions also face transition risks due to the structural and local economic and social transitions necessary to meet the challenges of climate change. Rather than risks based on geography, these credit unions are at risk due to their field of membership within high-GHG-emitting (and thus high-transition-risk) industries. To assess transition risks, this study identified credit unions with fields of membership most likely to be profoundly impacted by climate transitions in the form of economic shifts and regulatory change. We determined transition risks in terms of assets by calculating the sum of assets for every credit union with a petroleum refining and manufacturing and utilities fields of membership.[118] We concluded that 6 to 7% of federally chartered credit unions face high transition risks by dividing the total assets for petroleum refining and manufacturing and utilities FOM by the total assets of all credit union FOM industries to attain industry percentages.

Due to the limitations of public information, several assumptions are made in providing the physical and transition risks financial data. First, it is not possible to link individual credit unions' balance sheets, specifically asset, deposit, and loan amounts, to a specific branch location. These data are only reported at an institution-wide level. For example, it is not possible to determine exactly how much of a credit union's assets are located in a specific county. To approximate this, this study uses branch locations as a proxy for quantifying balance sheet values at risk. The balance sheet value (i.e., assets, deposits, loans) is divided proportionally across the number of credit union branches, and the geotagged branch location is then used to estimate the total amounts in the county, state, or region. There is substantial variability here at the credit union level, as assets, for instance, are unlikely to be divided equally across branches in reality. Indeed, many assets may not be directly tied to a branch location at all. Still, since branch locations generally correspond to the active footprint of the institution, they are considered the best proxy available.

These numbers are likely to underestimate the quantified values at risk. The NRI risk counties are overwhelmingly located along coastlines and cover many of the largest urban areas of the United States. These regions tend to have higher-than-average property values and cost of living than the average U.S. county. While this assumption does not necessarily matter to an individual credit union, it is relevant at a statewide and national level. Our belief is the actual quantified physical risk to the credit union industry at large could be greater than the estimates presented in this report.

Another limitation is that mortgage data in the HMDA data set is not all-inclusive. This is due to the fact that not every credit union is required to report this data to the Consumer Financial Protection Bureau (CFPB), with only credit unions that originate more than a certain number of mortgages required to report. This understandably does comprise the vast majority of originations but not all.

There are substantial limitations in measuring transition risk for credit unions based primarily on FOM data, which result in underestimated values. Only federally chartered credit unions report this type of data—representing 50% of the credit union industry by assets. The transition risk data provided does not fully represent the credit union industry, excluding values for some other credit unions, such as state chartered credit unions. Also, some FOM categories, such as "other" and "community," are too ambiguous and lacking in detail to be included in measuring transition risk. For instance, credit unions with a community field of membership may have expanded geographically and diversified their field of membership beyond a single or limited Select Employee Group. This has the potential to either expand or reduce relative risk exposure. Most agriculture-based credit unions fit this category. Therefore, for transition risk metrics, both the scarcity of publicly available data and the ambiguity of FOM categories reported should be taken into consideration.

Furthermore, the financial metrics provided for risks are more applicable to credit unions at the overall state and national levels than to individual credit unions. Some credit unions are more directly impacted by risks than others. To evaluate risk, it is necessary to consider a multitude of factors unique to a credit union, including field of membership, geographic location, physical branch presence, loan portfolio, and location of assets under lien, among many others. As noted earlier, it will be beneficial for all credit unions to collect data specific to their membership and conduct a similar analysis for themselves.

Finally, in light of the increasing physical risks of climate change, it is important that credit union management understand the evolving nature of the external resources they have historically relied on to manage and mitigate collateral impairment. Take, for example, homeowners insurance (in support of mortgage lending) and auto insurance (for automobile financing), and their associated tenor mismatch and pricing risks:

- Most residential homeowners expect to stay in the homes they purchase for 15 years before refinancing their mortgage.[119] However, it is not possible to purchase homeowners insurance for a similar tenor. It is renewed by the insurer annually, and coverage can be withdrawn. As mentioned earlier in this report, the risk of insurance coverage withdrawal is very real. In fact, it is already happening in California as a result of climate change[120] with non-renewal notices expected to begin issuing for many policyholders later this year.[121] As such, this **tenor mismatch** between the long-lived mortgage asset and the shorter-tenor insurance

"hedge" means that, upon coverage withdrawal, credit unions will find themselves with more exposure to a borrower default than originally anticipated.

- Similarly, climate change is causing some insurers to dramatically increase the cost of home insurance, leading to **pricing risk.** For example, it is estimated that policies could cost three to five times what they cost now due to increased climate change-related physical risk.[122] This additional cost of carry could negatively impact the credit worthiness of a borrower, thus increasing their probability of default.

Insurance companies are already adjusting their business models to account for the risks of climate change. Credit unions can do the same. Credit unions should not simply assume that the risk mitigants that worked in the past will continue to immunize their loan portfolios in a similar manner going forward.

General Challenges in Modeling the Risks of Climate Change

There are many methods available for financial institutions to perform climate risk assessment, and there is a growing number of resources available to support those institutions.[123] But major challenges remain.

Some of these challenges are inherent to climate change. As discussed in chapter 3, there are core uncertainties associated with climate change, including the complexity and nonlinearity of its impacts and time scale. Other challenges are related to the lack of data with the necessary precision. As the FSOC report notes, "While significant data related to climate change already exists, there remain gaps in connecting the science of climate change to financial risk assessments and real-world economic impacts."[124]

Take, for example, a hypothetical credit union with a commercial loan to a manufacturing firm. How might that credit union seek to model the climate-related risks of that loan? An accurate assessment could involve any and all of the following:

- Identifying precise geolocation data on borrower's assets and operations.
- Conducting a scenario analysis of how this borrower would be impacted by a potential carbon tax.
- Investigating how extreme weather could impact this borrower's operations and supply chain during the estimated life of its relationship with your credit union.
- Obtaining data on the borrower's scope 1, 2, and 3 GHG emissions.[125]
- Working with the borrower to establish a transition plan to a net zero GHG emissions economy (as appropriate).
- Sharing information about carbon policies for both the industry the business is in and its physical jurisdiction.

Two-thirds of respondents to an April 2020 survey of members of the Basel Committee on Banking Supervision's Task Force on Climate-Related Financial Risks indicated they lack sufficiently granular or reliable data necessary to run climate risk assessment models.[126] And another recent study found that while an overwhelming majority of organizations surveyed, 85%, sought to reduce GHG emissions, most even setting reduction targets, only 11% actually cut emissions in line with their ambitions over the past five years. The leading roadblock: "inability to measure accurately and exhaustively," which is why it is so important to engage with your in-scope borrowers now to collect these data.[127]

Resources for Credit Unions

Solving the data and methodological challenges will require collective effort and shared resources. There are a number of organizations offering such resources outside the credit union system, a non-exhaustive sample of which are listed below.

Climate Safe Lending Network

The Climate Safe Lending Network is comprised of a group of diverse financial industry organizations, from banks to asset managers to credit rating agencies to nonprofits, dedicated to accelerating the decarbonization of the banking sector. The network's "Good Transition Plan," released in October 2021, offers an actionable guide for financial services providers like banks and credit unions to create effective climate transition plans.[128]

Global Alliance for Banking on Values

The Global Alliance for Banking on Values (GABV) is a network of 67 financial institutions across the globe, including four U.S. credit unions, "using finance to deliver sustainable economic, social, and environmental development." GABV runs a popular and well-respected conference for its members and is developing research and resources to support those organizations. GABV was frequently mentioned by interviewees for this research as a leading resource on thinking related to a variety of values-based banking topics, including climate change.

Net Zero Banking Alliance

The Net Zero Banking Alliance is a United Nations–convened, industry-led group bringing together banks worldwide that are committed to aligning their lending and investment portfolios to achieve net zero emissions by 2050. The network will provide opportunities for peer learning and the development of industry frameworks and guidelines.

Partnership for Carbon Accounting Financials

The Partnership for Carbon Accounting Financials is the leading organization enabling financial institutions to assess and disclose the GHG emissions of loans and investments. Led by financial industry organizations, PCAF set the international standard for GHG emissions

measurement and disclosure and has built out resources for implementing that standard for a variety of financial products and services, including through case studies in lending.

Sustainable Markets Initiative

The Sustainable Markets Initiative (SMI) was created in a collaboration between Prince Charles and the World Economic Forum, alongside a group of leading global organizations, to accelerate the transition to net zero. SMI includes a taskforce of CEO-level executives from some of the world's largest banks, and has published high-quality risk mitigation guidance and tools for climate transition planning. In a recently published "Practitioner's Guide for Banks," the taskforce introduced a detailed and practical methodology and target-setting structure for financial institutions to reach net zero, including the following six actions: defining the scope of emissions, measuring the baseline, selecting future emissions scenarios, measuring portfolio alignment, setting targets for reduced emissions, and using carbon offsets.[129]

United Nations Environment Programme Finance Initiative

The United Nations Environment Programme Finance Initiative has published The Climate Risk Landscape: Mapping Climate-Related Financial Risk Assessment Methodologies, which offers methodological tools, guidelines, scenarios, an overview of the regulatory landscape, and developments across climate risk assessment providers.

Ceres

The Ceres Accelerator for Sustainable Capital Markets is transforming the practices and policies that govern capital markets to drive the large-scale behavior and systems changes needed to achieve a net zero emissions economy. In addition to a number of reports relevant to stakeholders in financial services, the Ceres Accelerator also provides tools and videos in support of credit unions ready to learn and do more.

CHAPTER 4

A Deeper Dive on Our Recommendations

Climate change holds risks and opportunities for credit unions. Much like cybersecurity, which requires assessing risks and vulnerability to future potential threats, climate change poses risks that financial institutions need to understand and address to remain resilient

and grow. This report finds that there are unquestionably climate-related physical and transition risks already on credit unions' balance sheets. These risks are not only significant for some individual credit unions but also for the credit union system as a whole. Moreover, these risks will only increase absent urgent climate risk management and mitigation. At the same time, there are substantial business opportunities available in adaptation finance, which credit unions may be well positioned to move on, that will be claimed by others in the absence of proactive and coordinated credit union action.

This report finds that there are unquestionably climate-related physical and transition risks already on credit unions' balance sheets. These risks are not only significant for individual credit unions but also for the credit union system as a whole. Moreover, these risks will only increase absent urgent climate risk management and mitigation. At the same time, there are substantial business opportunities available in adaptation finance, which credit unions may be well positioned to move on, that will be claimed by others in the absence of proactive and coordinated credit union action.

Interviews with credit union leaders show that most credit unions are in the very beginning stages of their thinking on climate change. The topic is just starting to be "considered and acted on as an input to strategy," in the words of one interviewee. How should a credit union jump-start its efforts to address climate change strategically?

Most credit unions are in the very beginning stages of their thinking on climate change.

This report identifies several steps credit unions can take to act on climate-related risks and opportunities. These recommendations are aspirational yet also practical. They are critical for credit unions to consider as they seek to develop an understanding of the potential impacts from climate change and develop collective resources to manage those impacts. As readers review these recommendations, keep the following context in mind.

First, there is a wide variety of perspectives among credit union leaders on climate change and the appropriateness of a response from credit unions. This report does not dictate a single response for all credit unions. Instead, it offers information and resources for credit union leaders to act collectively to address risks and take advantage of opportunities—as they would with any other change in the market or operating environment. What matters is that credit unions engage in the conversation; these recommendations are intended to get that conversation started.

Second, there is a great deal of diversity among credit unions themselves. Most climate-related tools and resources have been developed with larger organizations in mind, but most credit unions are among the smallest financial institutions in the U.S. At the same time, these credit unions often serve the most vulnerable local communities, which would otherwise lack access to the most basic safe and responsible financial services. Any credit union response to climate change should not only take this diversity into account but seek to leverage it as a strength—to support those organizations best positioned to effect real change in managing climate risks and transitioning communities to a net zero economy and climate-resilient future.

Third, as discussed below, this report argues for a collective response among credit unions. Action by individual institutions may be necessary, but the most productive and successful approach to climate risks and opportunities will be a collaborative and coordinated one that focuses on the development of system-wide resources.

Recommendation #1: Credit unions should publicly acknowledge that climate change poses a risk to their balance sheet and to their members.

The commitment of credit unions to act on climate change will be essential as a foundation for change at the organizational and community level. It also is critical to mobilize the credit union system collectively toward addressing climate change.

Businesses, investors, nonprofit organizations, policymakers and regulators, consumers, and the general public are directing increasing attention to climate change. Many financial system stakeholders are seeking to understand the implications of climate change for the stability of individual financial institutions and the financial system as a whole. As a first step, many private-sector organizations, including many banks and other credit union competitors in financial services, as well as a significant number of federal and state financial regulatory authorities, have issued public statements about the risks of climate change.[130] The Net Zero Banking Alliance, made up of 108 banks in 40 countries—including the six largest banks in the United States—offers one example of such a statement. When it comes to U.S. credit unions, NCUA board chair Todd M. Harper has made a number of statements recognizing the role of the NCUA in "measuring, monitoring, and mitigating" climate-related risks; and the NCUA has formed a climate financial risk working group.[131]

Credit unions that acknowledge that they intend to proactively address the challenges posed by climate change will gain credibility among this diverse set of stakeholders and especially consumers and the communities they serve.

Some credit unions have already begun acknowledging the risks and opportunities of climate change as a first step toward building a strategy to manage those risks and opportunities.

United Nations Federal Credit Union (UNFCU), for example, has published an annual sustainability and impact report since 2016. Clearwater Credit Union has similarly published a comprehensive organizational environmental impact assessment and are members of both the GABV[132] and PCAF.[133] Both UNFCU and Clearwater Credit Union have achieved scope 1 and 2 carbon neutrality—in 2017 and in 2020, respectively. Verity Credit Union and Self-Help Credit Union also have announced plans to track and monitor the carbon impact of their loans and investments.

FIGURE 11

IMPACT REPORTS FROM CLEARWATER CREDIT UNION AND UNITED NATIONS FEDERAL CREDIT UNIONS

Sources: Clearwater Credit Union. "2020 Environmental Impact Assessment." clearwatercreditunion.org/files/2022/02/2020EIA.pdf and United Nations Federal Credit Union. "2020 Impact Report." www.unfcu.org/news-announcements/2020-impact-report/.

Recommendation #2: Credit union leaders should conduct research and educate themselves, their members, and other stakeholders about climate-related risks and opportunities facing their organizations.

Commitment requires understanding, and credit union leaders should invest in developing their own understanding of the risks and opportunities posed by climate change while

educating their members and other stakeholders about those risks and opportunities. In interviews in preparation for this report, credit union leaders openly expressed that they and many of their colleagues were just beginning their efforts to research the implications of climate change for consumer finance and the potential responses of financial institutions. This report provides one place to start.

For those credit unions looking for another first step, consider identifying the organization's current climate risk management practices to establish baseline activities and plan for future initiatives. These efforts need not be member-facing initially. Suncoast Credit Union offers examples of where credit unions can begin, such as measuring and acknowledging their operational environmental impact.

Other credit unions have leveraged their commitments to the well-being of their communities as a starting place. Credit union leaders can explore how climate change already is impacting their communities, often disproportionately for low-moderate-income communities and communities of color. See, for example, how VSECU has aligned its commitment to environmental sustainability with its broader mission to support the health and well-being of members and employees, or how Civic Federal Credit Union has integrated its climate change efforts—including achieving scope 1 and 2 carbon neutrality—into its overall strategic plan, with a triple bottom-line focus on people, purpose, and prosperity.

Credit unions that have not yet started can begin by researching the business opportunities of climate adaptation finance. One place to start is by considering what other credit unions are doing. The recently chartered Clean Energy Credit Union has built a value proposition around environmental sustainability and tackling climate change. Their focus on providing loans that help people afford clean energy products (for example, solar home energy retrofits) and sustainable investments has led to significant growth. Clean Energy Credit Union also has a successful loan participation program, where credit unions can become familiar with the clean energy asset class by first purchasing loan participations from them. Others, like VSECU and Self-Help, have developed new business lines. These include new retail lending products for electric and clean energy vehicles, solar electric systems, or green home retrofits; on the commercial side, credit unions can focus on providing business services, loans, and investments to businesses and nonprofit organizations seeking to offer green products or services, improve the energy efficiency of their facility or processes, build energy-efficient new homes or business spaces, or develop larger-scale sustainable energy and climate adaptation projects. Some financial institutions also are developing green savings accounts, certificates of deposit, or credit cards, and others, like PenFed Credit Union, are committing to buy the green loans of other organizations that originate them and then participate those loans out to smaller financial institutions.[134]

In total, the Inclusiv Center for Resiliency and Clean Energy estimates that as of June 2021, 376 community financial institutions—including 281 credit unions—are already involved in green lending.[135]

Finally, credit unions can start with risk measurement and mitigation. Managing risk is a core function of all financial institutions. Initiatives to measure and mitigate climate-related risks can, to some degree, be incorporated into credit unions' existing strategies, processes, procedures, and workflows. At the core of credit union action on climate change must be efforts to assess and disclose climate-related risks: balance sheet risks, including risks associated with lending portfolios, investments and insurance, and carbon accounting disclosures.

Managing risk is a core function of all financial institutions. Initiatives to measure and mitigate climate-related risks can, to some degree, be incorporated into credit unions' existing strategies, processes, procedures, and workflows.

Recommendation #3: Credit unions should begin collecting climate-relevant data for their organization.

"Data is a tool for enhancing intuition"—so says Hilary Mason, founder and CEO of Fast Forward Labs, data scientist and member of former New York City mayor Michael Bloomberg's Technology and Innovation Advisory Council. Credit unions well know that the success of risk management depends on data and that any effort to address the risks of climate change will require credit unions to collect and analyze appropriate data to better inform their risk management decision-making ability.

The Network for the Greening of the Financial System, an international group of central bankers and financial regulators that share best practices on climate risk strategies, stated in a 2021 report, "Reliable and comparable climate-related data are crucial for financial institutions [. . .] to assess financial stability risks, properly price and manage climate-related risks, and take advantage of the opportunities arising from the transition to a low-carbon economy."[136] These data include information on the drivers of physical risk (extreme weather events, sea level rise, ecosystem changes, etc.) and the drivers of transition risks (technology and policy change, changes in economic activities and business models, shifts in consumer and investor behavior, etc.); they also include granular, typically geolocated data on the exposure of both physical and financial assets, including critical infrastructure, and the quantification of organizations' GHG emissions footprints.

Reliable and comparable climate-related data are crucial for financial institutions [...] to assess financial stability risks, properly price and manage climate-related risks, and take advantage of the opportunities arising from the transition to a low-carbon economy.

Obtaining relevant climate risk management data presents a number of challenges since data collection is complex, new, and often divided across a number of organizations and projects, and collection, classification, and analytical systems. There are also methodological gaps in connecting data drawn from climate science to models of financial and economic impact.[137] As discussed below, many credit unions may not have the resources by themselves to conduct comprehensive data collection, and so filling these data and methodological gaps will require cooperation and resource sharing.

Nonetheless, there are a number of ways credit unions can begin to collect climate risk data. This report recommends that credit unions start with the following kinds of data:

- Geolocational information of critical borrower infrastructure and loan collateral.
- Direct and indirect (scope 1, 2, and 3; see below) GHG emissions data.
- Information on planned capital expenditures and their likely impact on company emissions, as well as transition plans (where available).

Several credit unions already have begun this data collection process, leveraging the GHG reporting models developed by PCAF. PCAF builds on the global standard for carbon accounting and reporting, known as the Greenhouse Gas Protocol. Over 240 banks and asset managers representing over $66 trillion of assets are using PCAF to measure, disclose, and reduce emissions; PCAF is the official methodology called on by the European Banking Authority's regulations and by the TCFD.

The GHG Protocol classifies emissions into scope 1 (direct emissions from an organization's buildings, vehicles, and other infrastructure), scope 2 (indirect emissions from energy purchased by an organization but generated elsewhere, e.g., electricity purchased from utilities), and scope 3 (indirect emissions from an organization's operations, i.e., in the organization's supply chain or as a consequence of using an organization's products and services). Emissions tied to a financial institution's balance sheet—e.g., those resulting in part from a credit union's loans or investments—are classified as scope 3 emissions.

PCAF provides models and case studies for financial institutions like credit unions to use in calculating balance sheet or financed emissions linked to mortgages, vehicle loans, commercial real estate, and several other asset classes. Clearwater Credit Union

and Vancity both have disclosed the results of their 2020 GHG emissions analysis, and Clearwater has published an extensive methodological appendix that can be leveraged as a model for other credit unions.[138] This kind of resource sharing will be critical to the success of credit unions in implementing these recommendations.

Recommendation #4: Adopt the recommendations of the Financial Stability Board's Task Force on Climate-Related Financial Disclosures (TCFD).

The proper assessment and accurate pricing of the risks of climate change requires consistent, comparable, and actionable disclosures. The October 2021 U.S. FSOC report recommends that financial institutions adopt the framework developed by the TCFD. The Financial Stability Board is an international organization that makes regulatory recommendations to the G20 nations. The TCFD framework has quickly become a best-practice approach for companies of all kinds to report and leverage timely, decision-useful climate-relevant information for the purposes of risk assessment, capital allocation, and strategic planning. This framework already is widely used by banks and other corporations in the United States and internationally. As of February 2022, 3,000 organizations—including many large financial institutions—had joined.[139] Moreover the proposed climate disclosure rule issued by the SEC on March 21, 2022 utilizes the TCFD as a basis for their recommendations. This means, when the final rule is implemented, all U.S. public companies will be using this framework.

The proper assessment and accurate pricing of the risks of climate change requires consistent, comparable, and actionable disclosures.

To gain a better understanding of a company's climate-related risk and stand up the pillars of a risk mitigation plan, the TCFD recommends that companies share climate-related information in the following areas:

- Governance
- Strategy
- Risk management
- Metrics and targets

Adoption of the TCFD framework cannot be achieved overnight. It requires executive commitment, board and senior management focus, and organizational resources to effectively implement. The most recent TCFD status update, reviewing more than 1,600 companies, finds that while the percentage of companies that disclose information in alignment with

FIGURE 12

RECOMMENDATIONS OF THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Governance	Strategy	Risk management	Metrics and targets
Disclose the company's governance around climate-related risks and opportunities.	Disclose the actual and potential impacts of climate-related risks and opportunities on the company's businesses, strategy, and financial planning where such information is material.	Disclose how the company identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage climate-related risks and opportunities where such information is material.
a. Describe the board's oversight of climate-related risks and opportunities.	a. Describe the climate-related risks and opportunities the company has identified over the short, medium, and long term.	a. Describe the company's processes for identifying and assessing climate-related risks.	a. Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process.
b. Describe management's role in assessing and managing climate-related risks and opportunities.	b. Describe the impact of climate-related risks and opportunities on the company's businesses, strategy, and financial planning.	b. Describe the company's processes for managing climate-related risks.	b. Disclose scope 1, scope 2, and, if appropriate, scope 3 GHG emissions, and the related risks.
	c. Describe the resilience of the company's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the company's overall risk management.	c. Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets.

Source: TCFD (Task Force on Climate-Related Financial Disclosures). 2017. Recommendations of the Task Force on Climate-Related Financial Disclosures. TCFD, June 2017. assets.bbhub.io/company/sites/60/2021/10/FINAL-2017-TCFD-Report.pdf.

the TCFD's recommendations has gone up every year since 2018, this is an average of only 32% of companies aligned with TCFD's recommendations across all 11 disclosures.[140] The TCFD itself recognizes that this framework may not be tractable for the smallest organizations.

Still, this recommendation for credit unions to adopt the TCFD's disclosures framework is particularly important because it provides a practical, standardized framework for organizations to utilize even if they cannot immediately fulfill all the recommended disclosures. That is, the TCFD's recommendations double as a strategy framework, and credit unions should consider embracing them as such. Interviews with credit union executives show that climate change is only just starting to become part of their organizations' risk management frameworks. According to most credit union interviewees, current climate risk disclosure and analysis, if any has been implemented, is minor, typically prompted by an organization's intimate experiences with extreme weather events in their region, such as floods or wildfires. At the same time, there is a growing realization across

the industry that the implications of climate change go beyond weather events, but credit union leaders lack the tools needed to map the extent of those implications. A systemic approach, with dedicated resources and frameworks such as the TCFD, likely will become the norm going forward, and it will benefit credit unions to be proactive.

A systemic disclosure approach, with dedicated resources and frameworks such as the TCFD, likely will become the norm going forward, and it will benefit credit unions to be proactive.

Recommendation #5: Credit unions should conduct climate scenario analysis of their loan portfolios.

Credit union leaders interviewed for this research were aware of climate risks from a broad perspective, but they felt less confident in understanding the direct impacts of climate change on the credit union and its members. Scenario analysis—"the forward-looking projection of risk outcomes"—can help identify the unique climate-related physical and transition risks in their balance sheet and business model, assess their organizational and balance sheet resilience, and, importantly, identify data and methodological gaps.[141]

Credit union leaders interviewed for this research were aware of climate risks from a broad perspective, but they felt less confident in understanding the direct impacts of climate change on the credit union and its members.

For some but not all institutions, depending on their size, location, and/or membership, scenario analysis based on both backward-looking data (such as past emissions) and forward-looking data (such as planned expenditures) may be a useful supplement to risk measurement.

The Basel Committee on Banking Supervision at the BIS recommends that in conducting scenario analysis, including portfolio stress testing, financial institutions "consider physical and transition risks as drivers of credit, market, operational, and liquidity risks" and model a range of plausible transmission channels for those risks to impact the organization over several relevant time horizons.[142] In the United States, the FSOC concurs, recommending that U.S. financial regulators develop methods to use scenario analysis to assess systemic risk and support individual organizations in their risk management.

As of February 2022, the Network for Greening the Financial System, a network of 108 members and 17 observers from central banks and financial supervisors from around the world, and the International Energy Agency have developed a variety of ready-built scenarios that can be leveraged for credit unions to begin, even preliminarily, to map

climate-related risks. For example, credit unions might find the following risks "hidden" in their business models and balance sheets:

- Loans in their mortgage portfolios or commercial lending portfolios that may not qualify for insurance in the future because of their location, impacting both the cost of ownership and the risk profile of existing loans. This is a current concern as AIG is pulling out of certain California markets due to fire risks.[143]
- Properties in their loan portfolios whose value does not align with future market value given a climate-related reset, such as rising sea levels.
- Retail or business members whose employers, companies, or industry may be hit by a direct physical loss due to a weather catastrophe or may be struggling due to climate-related transitions—new policies, new consumer preferences, economic restructuring, and so on.

A small number of credit unions are already conducting scenario analysis on their loan portfolios in the face of economic uncertainty; integrating climate data is not dissimilar in scope. The United Nations Environment Program Finance Initiative provides a practical user's guide for this type of analysis.[144]

Recommendation #6: Credit unions should invest in their organizations while leveraging partnerships and building system-wide resources.

Climate risk assessment and climate adaptation strategy requires new capabilities, and credit unions will be better positioned to respond to climate change by expanding internal talent with climate change expertise and investing in internal processes and systems that can help orient the organization and make climate risk management more feasible and efficient. At the same time, many credit unions are already strained for resources—money, talent, technology, and capacity—and so may not have the capability for dedicated talent and systems. System-wide resources will be necessary for all credit unions to benefit equally from climate change preparations.

First, credit unions should consider the role of their boards of directors. Many credit unions already assess their boards by evaluating board member backgrounds and capabilities against a desired skills matrix. Credit unions should consider including board members with climate risk management competence and expertise, reflecting the diversity of their stakeholders, or investing in training for existing board members. Climate-related board skills and knowledge may prove valuable should the evaluation of climate risk be incorporated into NCUA examinations. To ensure that board members have access to climate and ESG training, Ceres has partnered with Berkeley Law School to offer an online training program that pinpoints how board members can embed ESG into their roles. Ceres also offers extensive governance-related resources on its website.

Questions for Credit Union Boards to Consider

In a speech in November 2021, Michael Hsu, Acting Comptroller of the Currency, identified "five climate questions every bank board should ask."[145] Although intended for a large-bank audience, it is worth considering how prepared credit union boards are to answer these questions as strategic business concerns. (These have been adapted for credit unions.)

1. What is your credit union's overall exposure to climate change?
2. Which counterparties, sectors, or locales warrant heightened attention and focus from your board and senior management?
3. How exposed is your credit union to a carbon tax?
4. How vulnerable are your data centers and other critical services to extreme weather?
5. What can your credit union do to position yourself to seize opportunities from climate change?

Second, credit unions should consider investing in climate expertise for their senior management. One option might be for credit unions to create a senior policy advisor role, such as a climate risk officer or chief sustainability officer. Another option would be to incorporate this responsibility into an existing function on the senior management team, such as lead strategy officer or head of enterprise risk management.

Finally, credit unions should consider establishing internal climate risk working groups; this is often a strong first move for those credit unions just getting started. Associated climate-related training and development provided to other team members also will be crucial as credit unions build out more robust climate risk management capabilities. Credit unions also can internally prioritize and reward their employees for integrating climate considerations into day-to-day decision making. In terms of human capital, more than one interviewee characterized environmental sustainability initiatives as a talent attraction and retention tool, especially for younger staff members.

In reality, many credit unions may not be ready or may not have the resources for dedicated climate-focused talent. Indeed, there is a risk that the smallest credit unions serving the most vulnerable local communities will be further marginalized if they attempt to replicate the responses of much larger institutions. Most credit unions will thus be best served through a partnership-driven approach. Thus, Systemic investments that prioritize building collective resources will be absolutely critical to support credit unions and ensure they are able to

progress on these and other action steps in the face of climate change. For example, credit unions and their system partners—including industry trade groups, third-party technology and data providers, researchers, nonprofit organizations, and others—must collaborate to tackle the complexity and incompleteness of climate-related data and plug the data and methodological gaps into climate risk measurement. Credit unions also will benefit from working with system partners and providers to develop climate adaptation finance business models and associated products and services, such as green lending lines. There are significant opportunities for innovation to meet the emerging needs of consumers looking for climate-friendly options in banking.

Most credit unions will be best served through a partnership-driven approach. Thus, Systemic investments that prioritize building collective resources will be absolutely critical to support credit unions and ensure they are able to progress on these and other action steps in the face of climate change.

Inclusiv Center for Resiliency and Clean Energy

Inclusiv, formerly the National Federation of Community Development Credit Unions, has established a Center for Resiliency and Clean Energy to build a network of credit unions committed to jointly designing and scaling solutions to climate change, with a goal of promoting affordable and sustainable energy for all people. The center is investing in research, advocacy, training, and a network of organizations that can share and learn together to increase capacity and scale. An initial certificate program—developed in partnership with the University of New Hampshire Carsey School of Public Policy Center for Impact Finance and the U.S. Department of Energy Solar Energy Technologies Office—provides training in consumer and commercial solar lending for credit union staff. To date, the program has trained 202 individuals from 117 organizations, with a waiting list of lending professionals to go through the program and launch or expand green lending at their credit union.

Recommendation #7: Credit unions should foster proactive communication among credit unions, national trade associations, state leagues, policymakers, and state and federal regulators.

A major source of climate-related uncertainty for credit unions is the potential for future regulatory action. In interviews, some credit union leaders and system partners

expressed that they were not sure how examiners would react to new green lending efforts, for example, and were wary of moving too fast for fear that underwriting and origination procedures and documentation were not well fleshed out. Others explained that they were not sure what to expect from policymakers and regulators in terms of required risk measurement and disclosures. Overall, interviews with credit union executives characterized their current stance on climate as more reactive while waiting for clear guidance from regulators on how to measure risks. This report makes no specific recommendations regarding regulation. It makes clear, however, that developing strong working relationships among these system stakeholders, with transparent expectations, will allow credit unions to be less reactive and move forward with more clarity and certainty.

Credit union leaders interviewed for this project were clear in recommending that, rather than wait for regulatory action, credit unions should actively engage with system stakeholders, including regulators, on climate change to (to paraphrase several interviewees) create a regulatory regime that appropriately assesses climate-related risk factors and provides flexibility, incentives, and the necessary resources for credit unions. One interviewee suggested that a CDFI-certified credit union heavily engaged in green lending should receive lower asset risk weighting; another suggested that the NCUA's approach to DEI—which emphasizes voluntary self-assessment and close partnership with supportive system partners, from the national trade associations and state leagues to research organizations like Filene—would be a good model to replicate for climate change.

There was general acknowledgment among interviewees that creating a productive regulatory structure will not be fast and easy. No one size will fit all organizations' particular situations, especially in an industry as diverse as the credit union system, and regulators will have to bring themselves up to speed alongside industry professionals. Every institution will have to do individual work to dig into and understand their portfolios and communities and the specific risks attendant upon them. That is why engagement now on this topic is so important. Specifically, credit unions, system organizations, and policymakers and regulators can work together to create resources and find ways to support credit unions, especially smaller organizations, as they seek to tackle climate risk management in a way that moves beyond a "check-the-box" exercise to embrace a more impactful climate adaptation strategy.

Credit unions have too often gone unrecognized as laboratories for innovation in consumer finance. With resources, credit unions can act quickly and proactively to address emerging market shifts and profound social challenges. Climate change is both of these, and credit unions can be leaders in responding.

About Credit Unions

Credit unions in the United States were originally founded in the first decades of the twentieth century to meet the needs of working-class people for basic financial services: a place to save safely and a means to access credit for consumption and productive investment. The first credit union in the United States was founded in Manchester, New Hampshire, in 1908;[146] after several decades of growth, grassroots organization, and legislative lobbying, the passage of the Federal Credit Union Act in 1934 established credit unions as federally recognized financial institutions.[147]

Credit unions constitute a systemically important and significant segment of the U.S. consumer finance system, offering a critical alternative to retail and commercial banks and "alternative" (nonbank) financial services providers, including check cashers, payday lenders, and online fintech providers of payment, lending, and other financial products. At the end of 2021, according to the NCUA,

FIGURE 13

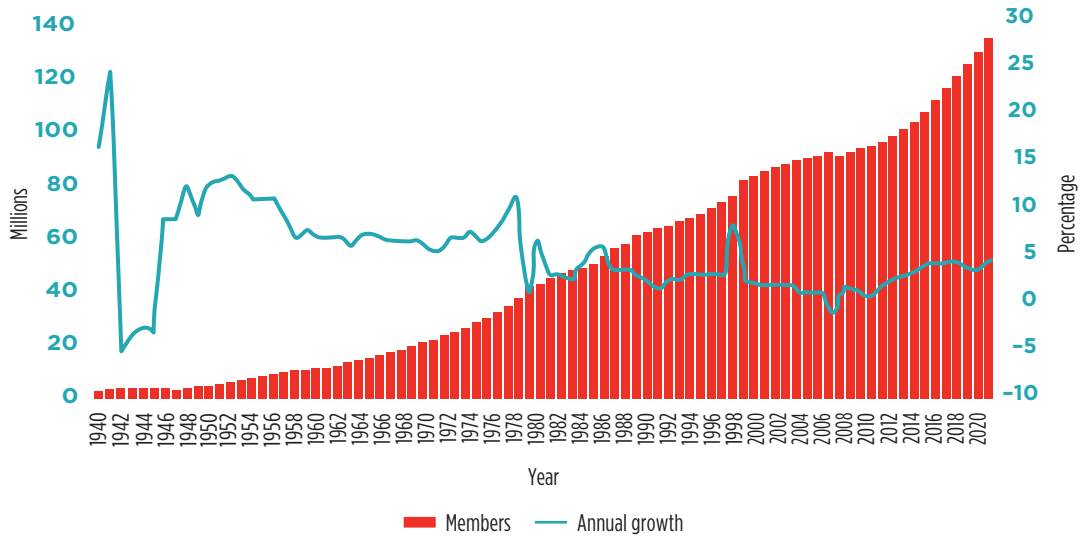
CREDIT UNIONS VERSUS BANKS

	All credit unions*	All banks*
Assets	$2,040.7 billion	$23,262.8 billion
Shares	$1,768.5 billion	$17,632.9 billion
Loans	$1,235.6 billion	$10,920.3 billion
Loans to shares	69.9%	61.9%
Capital	$217.7 billion	$2,099.9 billion
FTE employees	324,198	2,059,889

Note: *All numbers are totals as of September 30, 2021. Analysis by Callahan & Associates.

FIGURE 14

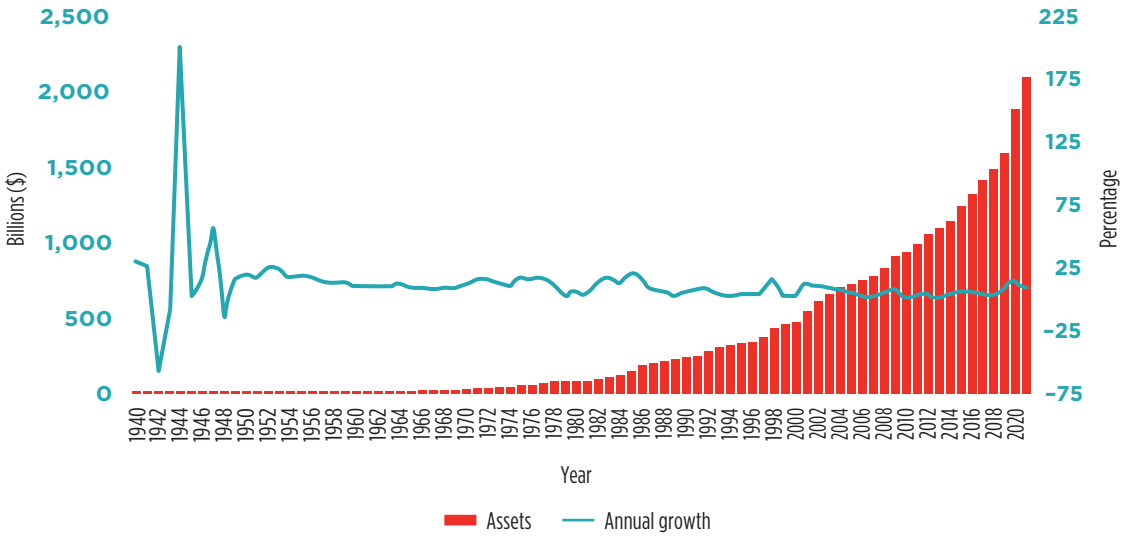
CREDIT UNION MEMBER GROWTH, 1940–2021



Source: Data as of December 31, 2021. Analysis by Callahan & Associates.

FIGURE 15

CREDIT UNION INDUSTRY ASSET GROWTH, 1940–2021



Source: Data as of December 31, 2021. Analysis by Callahan & Associates.

there were 4,942 federally insured credit unions, serving almost 130 million members.[148] Ninety percent of all credit unions have less than $800 million in assets and 50% have less than $50 million in assets—and the largest credit unions can rival the size of some super-regional and national banks. (Navy Federal Credit Union, for example, has over $150 billion in assets and serves over 11 million members.) The credit union industry as a whole holds some $2.06 trillion in assets and $1.26 trillion in loans—very roughly equivalent to one of the "big four" U.S. commercial banks or the U.S. community banking sector as a whole.

Key Differences between Credit Unions and Banks

While credit unions generally offer the same services as traditional banks, they are organized very differently.

First, credit unions are cooperatively owned financial institutions. Users of credit union services are in fact owners of the credit union, contributing a no-par value, nominally priced "share" to become "members." Member-owner representatives can be elected to the board of directors on a "one member, one vote" basis.

Second, credit unions are tax-exempt, not-for-profit organizations.[149] Credit union profits or "earnings" are reinvested in the cooperative or returned directly to members through a cash dividend.

Third, credit unions are subject to a range of legal and regulatory limitations on their chartering and functioning. Only certain consumers are eligible to join specific credit

unions according to each organization's "field of membership," such as a shared employer or industry, participation in a voluntary association, or a well-defined geographic community.[150] With few exceptions, credit unions' only means to raise capital is through their internally generated retained earnings.[151] And credit unions also have limits on commercial lending activity and the ability to offer complementary financial services offerings, such as investment and wealth management services or insurance.

Credit Union Regulation

The U.S. credit union system is unique in that it is a federated dual charter system: credit unions can be chartered federally or by individual states.[152] The NCUA was created in 1970 to regulate federal credit unions. Today, the NCUA also administers the credit union deposit insurance fund similar to the FDIC, called the National Credit Union Share Insurance Fund (NCUSIF). Its central focus is on ensuring the health of the NCUSIF, maintaining the safety and soundness of the credit union system, and supporting credit union sustainability broadly. State regulatory authorities, meanwhile, oversee state-chartered credit unions. The vast majority of state-chartered credit unions, however, belong to the NCUSIF and so also are subject to some NCUA rules.

With some differences to account for size, all credit unions also are subject to the same kinds of prudential regulations as other U.S. chartered financial institutions, including for example, those issued by the CFPB, the Bank Secrecy Act and other anti-money laundering and "know your customer" rules, the Durbin Amendment regulating interchange fees, Reg E on electronic funds transfers, the variety of regulations governing fairness and transparency in lending, and so on.

Credit Union Business Activities and Industry Trends

Credit unions, like most community banks, buy money through deposits and sell that money through loans, offering the same kinds of financial products and services. Credit unions, however, often are more conservative in their balance sheet management. Credit unions also tend to emphasize "bread and butter" services—savings, lending, and payments—even more than banks, and their loan portfolios are more heavily concentrated in traditional lending categories—home and automobile loans especially.

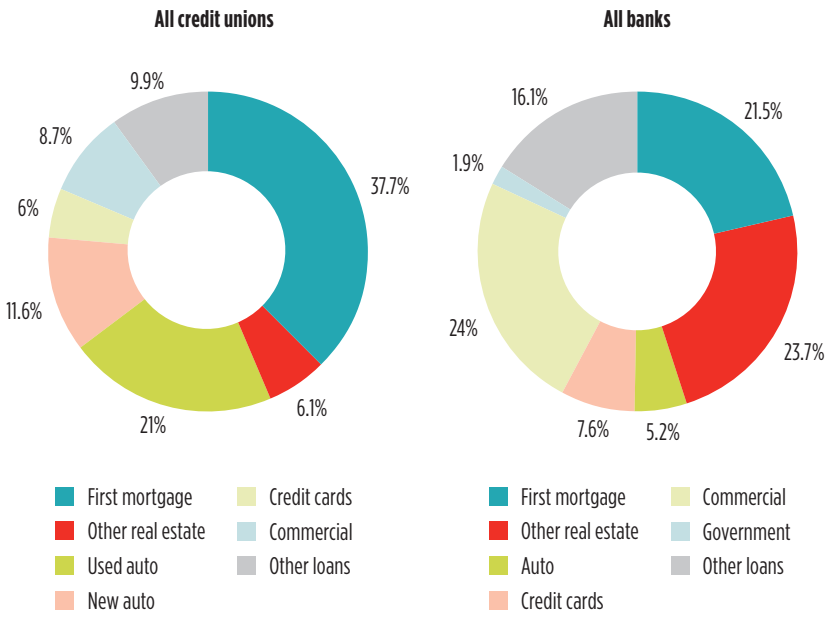
The loan portfolios of credit unions differ based on asset size. First mortgage loans make up almost half of larger credit unions loan portfolios, but that number shrinks as the asset size gets smaller. Auto loans make up a larger portion of the loan portfolio of smaller credit unions, which have a more balanced split between first mortgage and auto.

Credit unions have been historically underrepresented in commercial lending due to the long-term focus on serving workers and households, and so have a much smaller

percentage of commercial loans on their books than banks.[153] This is true for small businesses, too; while banks provide around 44% of small business financing, credit unions provide only 6%.[154] Nonetheless, this is a growing area of business for credit unions. For larger credit unions, commercial lending tends toward commercial real estate; smaller organizations have a larger portion of their commercial portfolio secured by farmland.

FIGURE 16

CREDIT UNION VERSUS BANK LOAN PORTFOLIOS

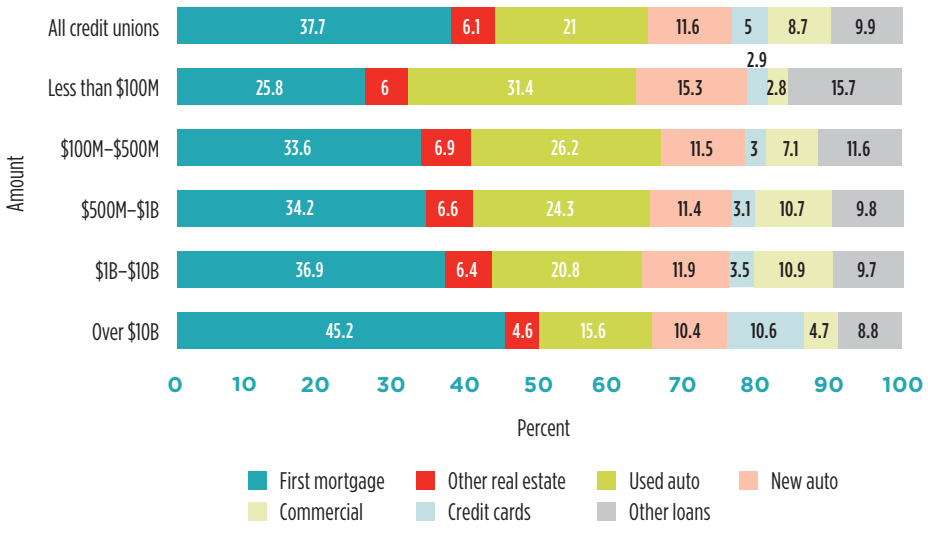


Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

The credit union differences—both in business purpose and social mission—remain relevant today. Credit unions tend to offer friendlier rates to consumers, putting pressure on other financial institutions operating in the same markets.[155] Credit unions historically have engaged in countercyclical lending (even while avoiding the kinds of risks that produced the 2007–2008 global financial crisis).[156]

FIGURE 17

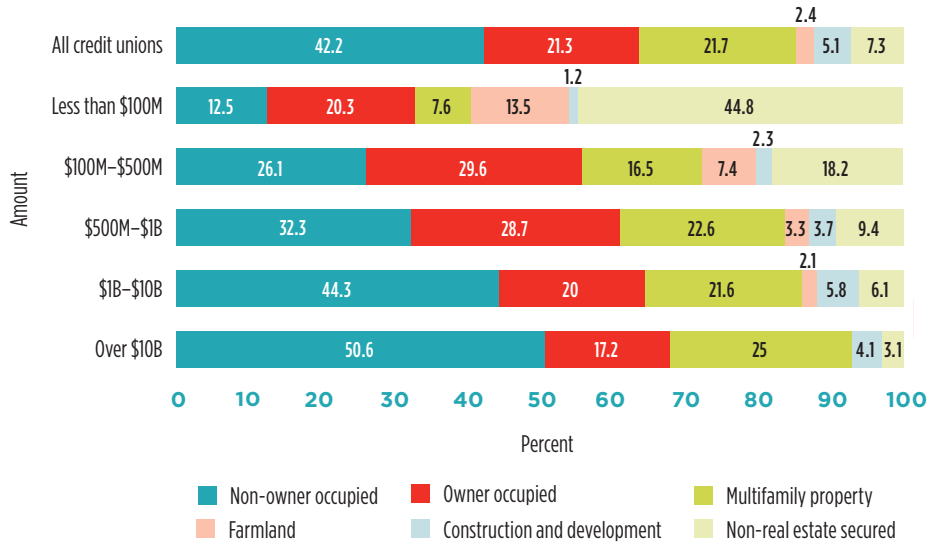
CREDIT UNION TOTAL LOAN PORTFOLIOS, BY LOAN TYPE AND ASSET SIZE



Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

FIGURE 18

COMPOSITION OF CREDIT UNION COMMERCIAL LOANS



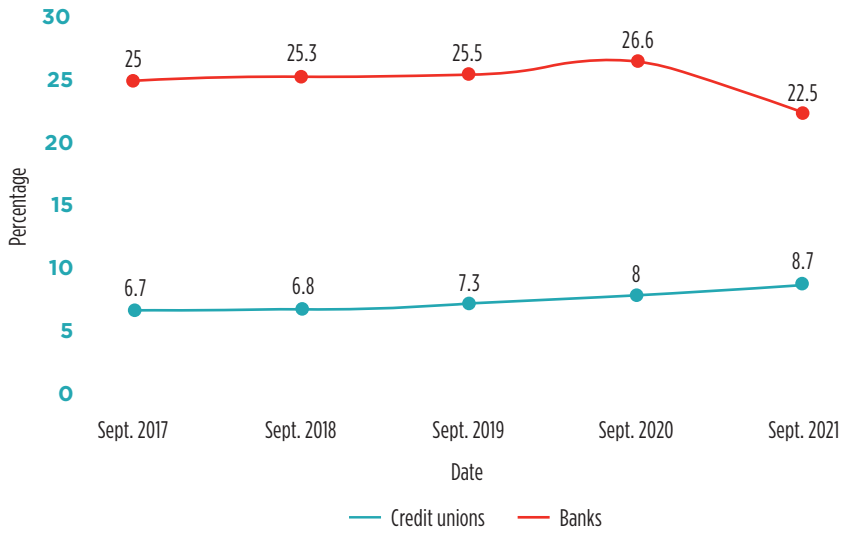
Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

Moreover, credit unions have long been at the forefront of efforts to improve social and economic outcomes in their communities. The presence of credit unions in a local economy, for example, has been linked to lower unemployment and stronger recoveries in the wake of a recession.[157] Credit union membership nationally is roughly representative of the U.S. population as a whole across a range of demographics and geographies.[158] Credit unions, however, also have a long track record of serving underserved populations. This is especially true for credit unions that are also CDFIs and minority depository institutions (MDIs).[159]

Today, many credit unions are seeking to reactivate their history as local, cooperatively owned, not-for-profit financial institutions to connect more closely with their communities to distinguish themselves in a crowded, competitive financial services marketplace.[160] Even small credit unions are creating philanthropic foundations and aligning their business as financial

FIGURE 19

CREDIT UNION VERSUS BANK COMMERCIAL LOANS AS A PERCENTAGE OF TOTAL LOANS OUTSTANDING



Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

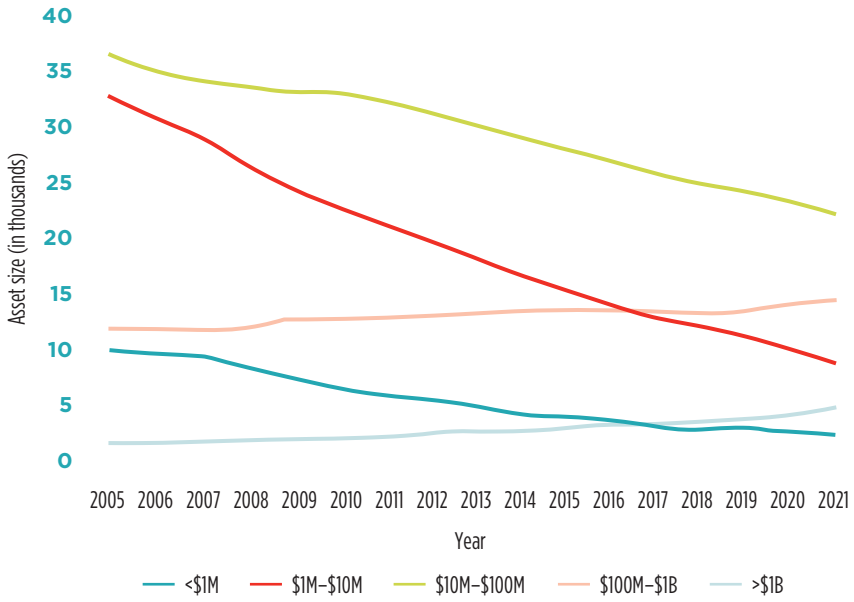
services providers with their philanthropic giving, employee volunteering, partnerships with local community organizations, and overall social impact strategy. For many credit unions, this means embracing financial well-being for all, DEI, and community impact as strategic differentiators.[161] Climate change intersects with these efforts in significant ways.

At the same time, credit unions also understand that their ability to make an impact is closely tied to their ability to operate sustainably and grow, and credit unions face unique challenges in the wider financial services industry. Digital and mobile channels have changed how people access financial services and their expectations of providers, and an uneven competitive landscape has emerged with a variety of new entrants. Many fintech providers operate digitally with a more targeted market and set of offerings, less burdensome regulation, and less need to demonstrate immediate financial sustainability due to venture capital backing and access to other support. The burdens of competition and the investment and innovation in technologies and talent needed for digital transformation are experienced disproportionately by smaller credit unions.[162]

One outcome of these pressures is ongoing system consolidation, with the total number of credit unions decreasing. The number of credit unions in the United States peaked at the end of the 1960s, with almost 24,000 organizations spread across the country. Since that peak, credit

FIGURE 20

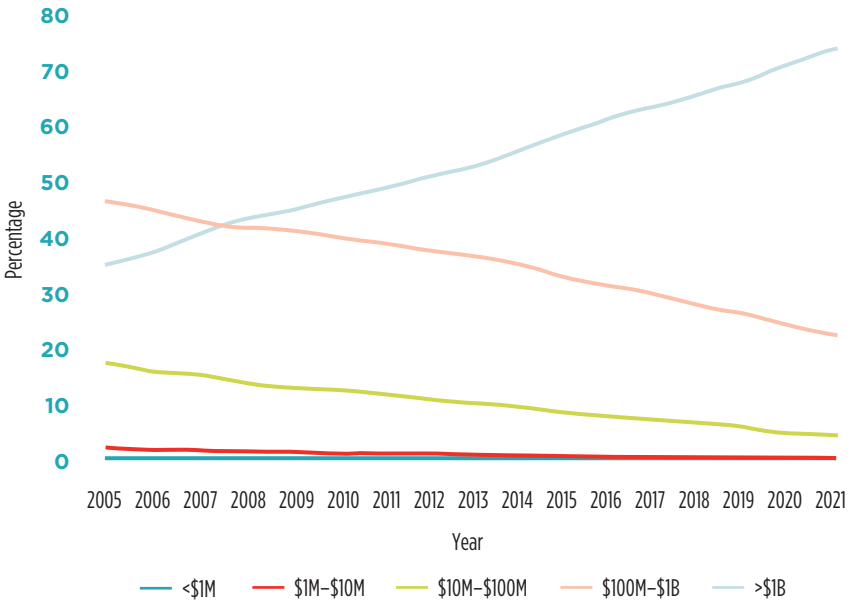
NUMBER OF CREDIT UNIONS BY ASSET SIZE RANGE, 2005–2021



Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

FIGURE 21

PERCENTAGE OF CREDIT UNION ASSETS BY ASSET SIZE RANGE, 2005–2021

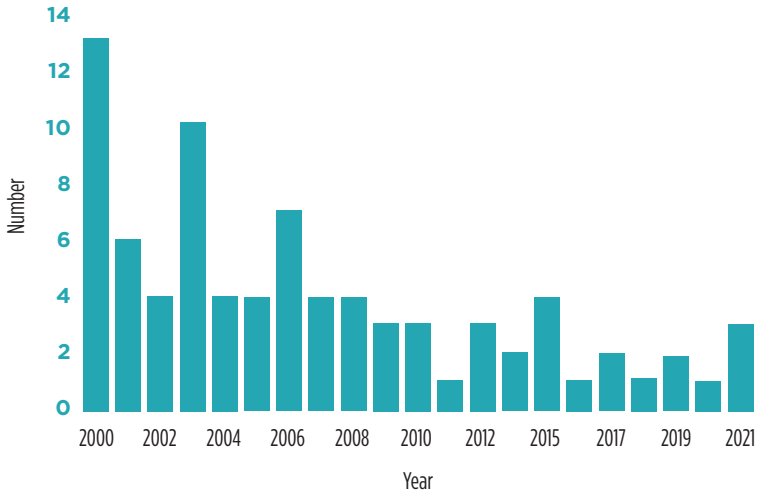


Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

union mergers have happened at a rate of around 2.94% annually, the number of newly chartered credit unions has dropped precipitously to just a handful a year, and the total number of credit unions has dropped to 4,942[163]—even as the credit union system as a whole has grown in terms of members, assets, and other key measures. Credit unions fail less often than similarly sized banks, and in recent years, banks have merged away at a faster rate than credit unions; many small credit unions have resisted pressure to merge as they continue to serve a dedicated field of membership.[164] Nonetheless, mergers continue in the face of competition, aging leadership, and other challenges; there were 161 credit union mergers in 2021. What is more, the creation of new credit unions is incredibly rare; there were only 4 new credit union charters approved in 2021, and only 20 since 2014. It is more common for an existing credit union to expand its field of membership.

FIGURE 22

NUMBER OF NEWLY CHARTERED CREDIT UNIONS, 2000–2021



Source: Data as of September 30, 2021. Analysis by Callahan & Associates.

The result of system consolidation is that the overwhelming majority of credit union members, industry assets, deposits, loans, branches, employees, and much more is increasingly bunched into a smaller number of larger organizations.

FIGURE 23

AT–PHYSICAL RISK CREDIT UNIONS BY COUNTY

	Credit union branches	% Credit union branches	Credit unions with branches	% Credit unions	Deposits	% Deposits	Credit unions with mortgage origs.	% Credit unions with mortgage origs.	$ Mortgages originated (2020)	% Mortgages originated (2020)
At-risk counties	11,626	56.50%	3,209	62.48%	$1,061,997,777,538	61.26%	1,279	90.52%	$158,106,644,968	57.40%
Other counties	8,952	43.50%	2,791	54.34%	$671,613,935,133	38.74%	1,299	91.93%	$117,329,210,008	42.60%
Grand total	20,578	100.00%	5,136	100.00%	$1,733,611,712,672	100.00%	1,413	100.00%	$275,435,854,976	100.00%

Source: Data as of June 20, 2021. Analysis by Callahan & Associates.

FIGURE 24

AT-RISK CREDIT UNIONS BY STATE

State	At-risk branches	Estimated at-risk assets	Estimated at-risk members	Estimated at-risk loans	Estimated at-risk deposits	Estimated at-risk employees (FTEs)	Estimated at-risk loan income (2021)
AK	34	$4,532,774,056	296,884	$3,235,414,929	$4,042,019,915	885	$134,831,655
AL	315	$21,833,377,883	1,640,057	$10,456,270,392	$19,515,657,275	3,824	$478,275,613
AR	96	$3,793,192,295	322,824	$2,369,061,890	$3,177,842,177	803	$104,695,493
AZ	293	$34,518,711,420	2,303,551	$18,600,092,598	$30,251,845,256	5,955	$852,044,601
CA	1,526	$269,964,735,737	13,744,913	$147,832,472,214	$235,263,235,373	32,263	$6,125,003,991
CO	232	$32,235,763,287	2,042,902	$21,959,783,419	$27,936,250,665	4,805	$935,373,923
CT	132	$8,449,483,320	576,888	$4,656,953,873	$7,568,728,734	1,212	$184,649,699
DC	105	$18,566,289,757	805,319	$10,838,708,668	$15,792,305,320	1,832	$455,756,366
DE	13	$773,258,226	47,934	$365,460,751	$686,845,490	141	$16,863,053
FL	945	$105,096,456,473	7,197,931	$66,251,576,542	$91,993,432,377	17,515	$2,915,692,303
GA	231	$25,958,148,895	1,759,029	$15,484,353,773	$22,449,850,933	4,031	$708,599,694
HI	150	$16,988,895,146	1,098,530	$8,158,840,266	$14,728,131,617	2,501	$376,119,327
IA	167	$17,265,185,380	901,172	$13,251,095,947	$14,576,225,446	2,694	$580,394,852
ID	1	$36,345,985	3,245	$23,880,098	$32,772,912	10	$1,073,175
IL	356	$36,500,744,578	2,187,020	$22,247,632,144	$31,412,086,896	4,922	$981,236,278
IN	221	$13,932,654,010	1,049,957	$8,733,097,576	$12,057,044,231	2,808	$357,825,065
KS	126	$6,151,682,440	489,029	$4,201,643,422	$5,198,980,094	1,452	$191,693,485
KY	116	$8,203,281,530	633,585	$5,123,331,629	$7,076,201,150	1,558	$231,337,102
LA	309	$12,653,013,279	1,071,882	$7,850,573,971	$10,991,619,388	3,072	$378,286,838
MA	141	$11,109,386,699	634,946	$7,323,284,026	$9,435,157,083	1,607	$276,922,310
MD	66	$8,173,738,257	557,887	$4,915,426,549	$7,007,261,102	1,147	$242,158,070
ME	0	$0	0	$0	$0	0	$0
MI	484	$43,813,295,190	2,667,941	$24,594,708,080	$37,943,298,324	7,394	$1,056,198,883
MN	133	$13,839,162,024	850,261	$9,047,170,713	$12,100,307,976	1,915	$380,240,568
MO	199	$10,408,429,384	879,194	$6,195,397,755	$9,079,976,760	2,453	$277,578,850
MS	136	$7,412,157,166	610,231	$4,397,952,098	$6,346,412,603	1,569	$228,851,748
MT	11	$1,735,618,256	63,195	$967,797,700	$1,532,165,420	203	$37,383,334
NC	392	$45,135,920,777	2,825,496	$24,571,095,509	$40,269,461,767	7,156	$1,181,182,844
ND	0	$0	0	$0	$0	0	$0

(continued)

FIGURE 24

AT-RISK CREDIT UNIONS BY STATE *(CONTINUED)*

State	At-risk branches	Estimated at-risk assets	Estimated at-risk members	Estimated at-risk loans	Estimated at-risk deposits	Estimated at-risk employees (FTEs)	Estimated at-risk loan income (2021)
NE	94	$4,657,658,892	411,005	$3,061,510,662	$3,943,989,036	1,021	$142,899,487
NH	0	$0	0	$0	$0	0	$0
NJ	214	$12,379,772,949	768,483	$6,400,753,813	$10,737,608,928	1,800	$288,364,021
NM	117	$13,857,260,752	896,431	$8,425,597,360	$12,228,556,672	2,590	$368,442,641
NV	114	$12,877,223,469	790,925	$7,185,012,903	$11,247,493,963	2,207	$342,398,881
NY	320	$28,359,795,104	1,850,486	$15,619,572,616	$25,269,959,788	3,854	$665,940,440
OH	368	$22,487,430,974	1,725,852	$14,224,266,741	$19,514,654,967	4,222	$638,195,253
OK	202	$17,170,961,751	1,176,245	$10,313,203,134	$14,827,151,637	2,991	$480,679,359
OR	266	$33,430,035,424	1,974,664	$19,382,705,737	$29,093,666,323	5,154	$803,802,707
PA	343	$27,594,294,872	1,791,465	$16,401,057,928	$23,950,855,597	4,184	$677,919,321
RI	41	$4,444,909,403	201,497	$3,429,968,427	$3,769,705,912	538	$124,985,109
SC	258	$19,679,656,416	1,509,164	$11,759,486,236	$16,702,208,558	3,940	$582,367,553
SD	36	$2,360,028,327	146,401	$1,338,361,853	$2,101,662,924	556	$58,213,443
TN	259	$14,600,729,384	1,142,343	$9,611,807,648	$12,566,063,129	2,766	$403,053,459
TX	1,323	$130,002,078,766	9,405,963	$84,396,901,350	$111,613,227,656	23,412	$3,908,015,872
UT	198	$18,385,300,713	1,341,218	$12,872,936,345	$16,212,382,694	3,691	$556,895,434
VA	21	$2,085,732,662	137,853	$1,187,162,620	$1,769,044,420	301	$59,490,687
VT	0	$0	0	$0	$0	0	$0
WA	443	$72,476,608,362	4,002,747	$40,361,790,723	$62,695,080,176	9,951	$1,767,769,904
WI	55	$5,413,517,160	354,651	$3,514,608,746	$4,598,423,305	920	$138,039,685
WV	24	$824,049,437	65,791	$439,939,115	$690,378,684	169	$20,340,611
WY	0	$0	0	$0	$0	0	$0
Grand total	11,626	$1,222,168,746,265	76,954,984	$723,579,720,489	$1,061,997,230,652	189,993	$31,718,082,987

Source: Data as of June 20, 2021. Analysis by Callahan & Associates.

FIGURE 25

HMDA MORTGAGE ORIGINATIONS, 2020

State	$ At-risk mortgages (2020)	$ Mortgages funded in state (2020)
AK	$179,460,000	$1,452,665,000
AL	$1,579,290,000	$2,454,485,000
AR	$364,160,000	$665,945,000
AZ	$4,135,450,000	$4,223,775,000
CA	$42,918,419,976	$44,383,040,000
CO	$6,300,390,000	$8,320,465,000
CT	$632,035,000	$1,913,095,000
DC	$1,067,370,000	$1,138,940,000
DE	$169,785,000	$436,115,000
FL	$12,546,980,000	$14,063,925,000
GA	$2,472,630,000	$4,861,370,000
HI	$1,456,990,000	$1,469,265,000
IA	$3,879,610,000	$6,950,260,000
ID	$13,615,000	$5,741,915,000
IL	$2,461,215,000	$4,677,010,000
IN	$2,355,189,992	$7,084,940,000
KS	$923,180,000	$2,287,305,000
KY	$1,095,435,000	$2,505,640,000
LA	$707,215,000	$978,745,000
MA	$1,870,560,000	$8,268,275,000
MD	$1,021,895,000	$6,378,735,000
ME	$0	$1,496,950,000
MI	$6,540,890,000	$14,435,780,000
MN	$2,490,520,000	$7,635,870,000
MO	$1,606,220,000	$3,267,925,000
MS	$349,745,000	$589,300,000
MT	$63,400,000	$525,460,000
NC	$5,831,660,000	$10,549,210,000
ND	$0	$598,070,000
NE	$898,700,000	$1,367,965,000
NH	$0	$2,017,275,000
NJ	$1,650,970,000	$2,908,065,000
NM	$1,143,805,000	$1,417,660,000
NV	$1,990,275,000	$2,413,325,000
NY	$1,979,845,000	$11,801,320,000
OH	$1,917,590,000	$4,668,800,000
OK	$942,925,000	$1,563,655,000
OR	$7,139,900,000	$8,170,405,000
PA	$2,255,925,000	$7,353,535,000
RI	$752,215,000	$1,564,360,000
SC	$2,206,435,000	$2,746,615,000
SD	$495,630,000	$1,109,940,000
TN	$1,571,695,000	$4,233,890,000
TX	$11,644,640,000	$14,637,700,000
UT	$3,460,740,000	$9,025,110,000
VA	$273,380,000	$10,702,230,000
VT	$0	$1,588,875,000
WA	$11,371,700,000	$14,560,595,000
WI	$1,355,325,000	$14,511,140,000
WV	$21,640,000	$378,785,000
WY	$0	$332,040,000
Total	$158,106,644,968	$288,095,720,000

Source: Data as of December 31, 2020. Analysis by Callahan & Associates.

FIGURE 26

AT-RISK CREDIT UNION FIELD OF MEMBERSHIPS

Field of membership	Assets	Total branches	Members	Employees (FTEs)
Manufacturing—all other	$3,219,222,291	71	103,490	204
Manufacturing—chemicals	$998,472,758	14	32,986	105
Manufacturing—machinery	$88,534,782	11	9,801	22
Manufacturing—primary and fabricated metals	$288,988,573	17	20,972	51
Manufacturing—transportation equipment	$20,659,421	7	2,327	9.5
Multiple common bond—primarily chemical	$16,927,074,267	147	904,823	2,189.50
Multiple common bond—primarily communications and utilities	$34,534,488,463	398	2,717,221.00	5,975.50
Multiple common bond—primarily machinery	$3,744,008,591	55	248,857	773
Multiple common bond—primarily metals	$3,701,721,551	88	281,056	809
Multiple common bond—primarily other manufacturing	$34,948,624,057	377	2,027,426	5,552.50
Multiple common bond—primarily transportation equipment	$30,376,626,111	234	1,600,160	4,394.00
Service-communications/utilities	$1,211,513,320	50	73,398	167.5
Multiple common bond—primarily petroleum refining	$11,475,111,196	122	571,572	1,527.00
Manufacturing—petroleum refining	$28,208,214	2	2,260	7.5
Grand total	$141,563,253,595	20,578	535,346	322,183.00

	Totals				Percentage of industry			
	Assets	Branches	Members	FTEs	Assets	Branches	Members	FTEs
Petroleum-based	$11,503,319,410	124	573,832	1,535	0.6%	0.6%	0.4%	0.5%
All manufacturing	$141,563,253,595	1,593	8,596,349	21,787	7.1%	7.7%	6.7%	6.8%

Source: Data as of June 20, 2021. Analysis by Callahan & Associates.

FIGURE 27

THE NATIONAL RISK INDEX NATURAL HAZARDS

The National Risk Index, used to determine physical risks for credit unions in this report, rates risks for U.S. counties and Census tracts for 18 natural hazards:		
1) Avalanche	2) Coastal flooding	3) Cold wave
4) Drought	5) Earthquake	6) Hail
7) Heat wave	8) Hurricane	9) Ice storm
10) Landslide	11) Lightning	12) Riverine flooding
13) Strong wind	14) Tornado	15) Tsunami
16) Volcanic activity	17) Wildfire	18) Winter weather

Source: Natural Hazards, FEMA National Risk Index, November 2021.
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About Filene

Filene Research Institute is an independent, consumer finance think-and-do tank. We are dedicated to scientific and thoughtful analysis about issues affecting the future of credit unions, retail banking, and cooperative finance.

Deeply embedded in the credit union tradition is an ongoing search for better ways to understand and serve credit union members. Open inquiry, the free flow of ideas, and debate are essential parts of the true democratic process. Since 1989, through Filene, leading scholars and thinkers have analyzed managerial problems, public policy questions, and consumer needs for the benefit of the credit union system. We support research, innovation, and impact that enhance the well-being of consumers and assist credit unions and other financial cooperatives in adapting to rapidly changing economic, legal, and social environments.

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