

2020 Financial Innovations Roundtable Summary

Expanding the Field of Climate Finance

Executive Summary

Over the past twenty-one years, the Financial Innovations Roundtable (FIR), located at the Carsey School of Public Policy at the University of New Hampshire, has worked to address problems related to access to capital for low- and moderate-income consumers and communities. Since 2014, the event has been co-hosted by the Federal Reserve Board. The FIR works with a range of financial institutions, government agencies, foundations, and trade associations to access their expertise for problem-solving discussions.

The 2020 FIR focused on the expanding field of climate finance and was co-hosted by the Federal Reserve Bank of San Francisco and The Climate Safe Lending Network. The event was originally slated to be in-person in San Francisco in May 2020 but was postponed due to the pandemic and shifted to an online event hosted November 16–17, 2020. A significant amount has happened in 2020 on climate finance, racial justice, the economy, and COVID-19. The shocks and stresses of climate change are creating risks in low- and moderate-income communities as well as in the financial sector broadly. The 2020 FIR offered an opportunity to discuss the challenges and opportunities banks and Community Development Financial Institutions (CDFIs) face as they address these risks and how these institutions can help increase individual, institutional, and community-wide resilience. The program explored new and modified products that address climate risk in communities and how those products can be scaled. Conversations focused around:

- The progress that has been made in the climate finance field and the challenges that lie ahead for financial institutions' climate impact and climate-related risk.
- Promising opportunities to decarbonize investments and finance low-carbon technology and infrastructure.
- How lenders, insurers, housing organizations, and the public sector can work together to reduce housing instability due to climate-related factors and increase the climate-resilience of homes and neighborhoods.
- Solutions to help communities address a wide range of related issues, including home weatherization and disaster preparation, home insurance loss, and climate gentrification and displacement.
- Discussing lessons learned from other sectors such as renewable energy in order to design both people-based and place-based finance solutions that promote racial and economic inclusion.

- The need for all financial institutions to acknowledge that climate risks and racial inequity are systemic risks affecting their bottom line.
- The role that bank regulators can play in promoting collaboration across the financial sector and in leading by example with regard to climate finance.
- Mapping out concrete action-item initiatives including policy and industry pathways to climate safe lending as well as building a financing platform to provide clean energy to low-income communities.
- More broadly, in order to systemically address climate risks, we will need to work together as a range of stakeholders across sectors and collaborate on shared goals and projects.

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Opening Remarks

Laura Choi, Vice President of Community Development at the Federal Reserve Bank of San Francisco, opens the roundtable with a welcome and introduction. Choi provides some background on FIR and thanks the partners who made the event possible. Then Choi delivers the following remarks:

“As we have seen throughout 2020, from historic wildfires to hurricanes, this year’s topic of climate change remains urgent. The San Francisco Fed is committed to monitoring the impact of climate change on the economy. As our Bank President Mary Daly said, the Federal Reserve’s job is to promote a healthy, stable economy. This requires us to consider current and future risks, whether we have a direct impact on them or not. Climate change is one of those risks.

Our work in this area at the San Francisco Fed began in earnest last summer and has since continued with research by Elizabeth Mattiuzzi on our community development team, and Jesse Keenan, professor at Tulane University and a visiting scholar at the San Francisco Fed, both of whom you’ll hear from during the conference. We are also proud that under President Daly’s leadership we were the first Federal Reserve Bank to host a public conference focused on climate change and the economy, which took place almost exactly a year ago here in San Francisco. As President Daly noted in that conference, climate change is an economic issue we cannot afford to ignore. Climate touches every aspect of the Fed’s mission—cash operations, bank regulation, and macroeconomic stewardship.

Over 100 experts representing finance, community development, and climate science are here today to talk about how we can marshal the resources and build the systems needed to address climate change. The San Francisco Fed is honored to help convene this discussion and we are so appreciative of everyone’s commitment to this incredibly important issue.”

Michael Swack, Director of the Center for Impact Finance at the University of New Hampshire’s Carsey School of Public Policy, also gives his welcoming remarks. Swack highlights that the goal of the roundtable “has always been to bring people together who share interests around a policy matter with finance as a common link” and “to share information in ways that may lead to collective action among the participants after the conference.” Swack notes that the roundtable has frequently led to the development of new financial instruments, tools, and policies and he hopes that this year will be no different. Although the virtual format limits traditional networking opportunities over meals or in hallways, online opportunities to connect are deliberately built-in throughout the conference.

Swack also reflects on how much has happened in 2020 with regard to climate finance, the economy, racial justice, and COVID-19. Given that “the shocks and stresses of climate change are creating risk for the financial sector and for low- to moderate-income communities,” Swack describes the central questions that will be examined throughout the conference and approached from a number of angles:

- What challenges and opportunities do banks and community development financial institutions face as they address these risks?
- How can financial institutions help increase individual, institutional, and community-wide resilience?
- What products are being modified or created to address climate risk—particularly in low-income communities—and how can they be scaled?

How to Get the Climate Finance We Need?

Panel Moderator: **Ian Galloway**, Manager in Community Development Finance at the Federal Reserve Bank of San Francisco

Panel Speakers:

- **Kate Gordon**, Director, California Governor's Office of Planning and Research, and Senior Policy Advisor to the Governor on Climate
- **James Vaccaro**, Interim Director, Climate Safe Lending Network
- **Marilyn Waite**, Climate and Clean Energy Finance Program Officer, William and Flora Hewlett Foundation
- **Jacqueline Smith**, Vice President, Sustainability, JPMorgan Chase & Co.
- **Eliza Eubank**, Managing Director & Global Head of Environmental and Social Risk Management, Citigroup

Ian Galloway, a Manager in Community Development Finance at the Federal Reserve Bank of San Francisco, serves as the moderator. Galloway first briefly introduces the panelists and then begins the discussion by asking Kate Gordon to talk about her role at the Governor's Office and her work in California.

Kate Gordon, Director of the California Governor's Office of Planning and Research, both leads the office and also serves as the Governor's senior policy advisor on climate. Gordon describes that the Governor's Office of Planning and Research is responsible for long-range planning for the Governor which often involves climate risk, resilience, and sustainable economic development. The current California Governor, Governor Newsom, has taken a very integrated approach to climate. Gordon says that "Governor Newsom is focused on taking climate to the rest of the government and really looking beyond those [more siloed] approaches to how do we incorporate our climate values, and goals, and strategies into our budget process, into our agency decision-making." Gordon notes that her office tends to focus on where there is not enough progress on the emission reductions side and on ways that they can make climate more of a mainstream issue in three big areas of transportation, natural and working lands, and climate finance. In terms of climate finance, the State is thinking a lot about disclosure and its role as a major asset owner and investor. Her office has been working closely with state pension funds to see what they have been doing in terms of climate investment and also what lessons they can learn from the private sector.

Next, **Galloway** turns to **James Vaccaro** to ask about how the Climate Safe Lending Network gets buy-in from such a broad and diverse group of stakeholders, which includes governments and financial institutions around the world.

James Vaccaro, Interim Director of the Climate Safe Lending Network (CSLN), responds by saying that in his experience (with banks large and small, NGOs, regulators, and governments) it is not necessarily the buy-in that is needed, but rather the recognition that no single entity can solve this all on its own. Vaccaro describes that if you leave any of these sectors out of the conversation, then participants can blame the unrepresented sector. Therefore, the key is bringing all these different groups together, which is what the Climate Safe Lending Network is doing. Vaccaro notes that currently much of climate finance is still "climate finance 1.0" that focuses only on risks to institutions, which he argues should be

the baseline and is already part of the work. He proposes that the next phase is to look beyond the risks just to institutions in order to both invest more in positive innovations and also to reverse the flow of resources into harmful efforts. At present there is no “polluter pays” framing, so when the climate risk to Community Development Financial Institutions (CDFIs) is raised by harmful loans written by large banks there are no compensatory payments. Additionally, Vaccaro points out that there needs to be an understanding of what is being managed. If just risks—both physical risks and transition risks—are being managed, that has consequences. He gives the example that a principle way that institutions might manage physical risks (such as increased flooding or wild fires) is to simply stop lending in those high-risk areas. He proposes that managing contributions to systemic risks can happen through setting targets and “putting in place some of the practical strategies to help clients to optimize their decarbonization” and “helping them find ways to bring in new emerging technologies” including supporting novel innovations. The goal of CSLN is to bring stakeholders together to accelerate these pathways in the next five years.

Galloway then asks **Marilyn Waite** about where she sees philanthropy playing a role in climate finance.

Marilyn Waite, Climate and Clean Energy Finance Program Officer at the William and Flora Hewlett Foundation, responds that the Foundation has a portfolio dedicated to energy and climate finance—as do many other foundations with a focus on solving climate change. Waite describes that “the portfolio seeks to mobilize capital to solve climate change so we can reach net zero by 2050 and we work across three economies, China, the European Union, and the United States.” The Foundation does this in two ways, through both innovative finance (“including various fund structures, helping to capitalize a new credit union dedicated to clean energy lending”) and through systematic decarbonization of capital (“embedding carbon as a metric in the financial system the same way that return on equity and return on investment are embedded in financial decision making”). Waite says their work on systematic decarbonization also pursues systemic shifts in market rules so that the market works for climate action.

Galloway next asks **Eliza Eubank** how climate risk and climate opportunity are relevant to her position at Citigroup.

Eliza Eubank, Managing Director & Global Head of Environmental and Social Risk Management (ESRM) at Citigroup, has a background in climate and joined Citigroup as it was an opportunity to push sustainability and environmental thinking in business sectors. Eubank describes that “Citigroup is the world’s most global bank in over 100 countries with a full suite of financial products.” While others at Citigroup are looking at other aspects of sustainability, the work of the ESRM team focuses on clients’ environmental and social impacts (which includes labor standards, water quality, biodiversity, etc. although climate risk and climate change have become more prominent in recent years). Originally, climate risk at banks was considered in the narrow scope of the Equator Principles (which Citi helped found in 2003) that looked only at project finance—what is the environmental impact of this power plant, toll road, whatever it may be that we are financing. In the last 17 years since then expectations have increased and there is now consideration of both physical risk and transition risk as potential credit risks. Eubank closes by responding to something that Vaccaro had mentioned which is that often the principal way risk is managed is by simply not investing in that area. In contrast, Eubank would label that strategy as risk avoidance and sees risk management as more nuanced, where a financial institution would first work to understand risks in a given context and what clients are doing to minimize, mitigate, and adapt to the risks so that risks can be priced into loans.

Next **Galloway** asks **Jacqueline Smith** about best practices at JPMorgan Chase that she would encourage other international banks to consider replicating.

Jacqueline Smith, Vice President of Sustainability at JPMorgan Chase & Co., speaks to how her current corporate role has reinforced the significance of just how much coordination is needed to address major issues like climate across and within institutions. In October 2020, JPMorgan Chase announced a Paris-aligned commitment that also launched the new internal Center for Carbon Transition which will oversee coordination within the bank. Another point Smith makes is the importance of evaluators considering how different approaches to addressing climate may be different across the financial industry, especially depending on the portfolios of financial institutions of different sizes and service areas. Smith says the third key best practice is disclosure—especially digging into data and metrics to identify which disclosures are most helpful for your shareholders and stakeholders. She cautions that “good disclosure needs to center on finding the right things to measure that really help companies evaluate where they are on their transition pathways, and help investors and banks evaluate carbon performance to ultimately make more informed decisions on their portfolios.”

Galloway notes that during the discussion he wants to dig into the topic of disclosures further. **Waite** adds that there are “leaders and laggards” of all sizes when it comes to embedding climate risk and opportunity in financial portfolios. **Waite** says that it is important that the leaders do not get pulled back or slowed by the laggards who are doing less. It is also crucial for institutions, regardless of their size, to take a holistic approach to evaluating asset classes. For example, auto loans need to be considered and reviewed even if they make up a small portion of their portfolio.

Galloway then opens the panel up to a broader discussion starting with a follow-up question to **Gordon** regarding how the public and private sectors work together to advance climate goals in California.

Gordon states that of course these sectors need to work together and explains that a current challenge is state budget limitations. Especially in California with recent wildfires, the emergency response budget is growing and reducing the ability to invest in proactive measures as in the past. Gordon says this example underscores the importance of thinking about physical climate risk in everything we do. In terms of the private sector, Gordon sees that there is a lot the public sector can learn around disclosure. Although transition risk tends to get more attention, right now physical risk is the most important piece for the public sector. California recently joined the international Coalition of Climate Resilient Investment in order to learn from private sector members of the coalition. Gordon also emphasizes that California is doing a lot of risk management but that they also need to be smarter about risk avoidance on future development. There is also a role for the government to provide the incentives, regulatory structures, and policy structures for climate-friendly private investment. Finally, Gordon says that there is a need for government to do a better job of de-risking projects to attract private sector investment in hard-to-finance and underbanked areas.

Galloway comments on the challenge of operating in emergency response mode, which prevents investment in prevention. He sees private capital as being one way to help bridge us to prevention in a way that potentially public dollars cannot. He then asks **Eubank** and **Smith**, as both are part of large global banks, what they see as the biggest climate risks and opportunities.

Eubank begins by discussing some of the risks, saying that while the field has come a long way and is evolving quickly, there is still very far to go. There has been a lot of interesting work in climate scenario

analysis for banks, although more has been done on transitional risks than on physical risks as Gordon pointed out. A reason behind this is that transitional risks are a bit easier to analyze due to data limitations. Finding appropriate data on physical risk and translating it into a financial model is more challenging, although there are people working on it. On the innovation side in terms of climate scenario analysis, in 2017 Citi joined a group of 16 banks convened by the UN Environment Programme Finance Initiative. One of the outputs of this group was an excel-based tool that banks could use to estimate future transition risk (out to 2040) presented by different carbon price and policy scenarios. At Citi, the average loan exposure is closer to three years, which makes these long-term analyses less immediately useful. For this reason, Citi then hired Oliver Wyman to create a much shorter-term 3-year climate stress scenario (again focusing on transitional risks).

Gordon responds to Eubank to say that everyone always says that looking at physical risk is more challenging than transitional risk. However, the data and projections are pretty clear on physical risks like in the case of extreme heat scenarios. Gordon points out that transitional risks are very dependent on political winds that may change so she “always find it very fascinating that transitional risk is seen to be more predictable.”

Eubank agrees with Gordon and clarifies that just because transitional risks are more difficult does not mean that she thinks we should not do it. Eubank also distinguishes that for a physical project banks have been better in considering physical risks (and indeed that is how many banks began considering climate risks) but that the challenges she was describing were at the portfolio level.

Gordon completely agrees with Eubank in terms of portfolio risk and just wanted to make that distinction clear.

Galloway directs back to **Smith** so that she can respond with her thoughts on opportunities.

Smith says that opportunities start with understanding your strategic goals as an institution and where you are going to have the most impact. Smith makes the point that when it comes to investors, they are often more comfortable with products that they already understand and know are viable (such as green bonds). Recent estimates are that around 30% of carbon reductions needed to achieve Paris will come from technologies that either do not yet exist or are not commercially viable today. Large financial players can also lead by example and have opportunities to engage their clients about climate change and climate risk. Finally, Smith acknowledges that policy is a key driver for global achievement of the Paris goals.

Galloway gives **Vaccaro** an opportunity to also speak on the topic of public-private partnerships.

Vaccaro says it loops back to the cycle that Gordon described clearly where emergency response has to be done, but then you are not able to invest in resilience and impact infrastructure that can mitigate future events. Vaccaro also agrees with Smith’s point that there will always be a preference toward green bonds and other well-known, viable products. That, he says, is where de-risking from specialist and public investors is important to attracting private investor involvement. Vaccaro then warns that we should not count on technologies that have not yet been invented coming through and being scalable. In terms of disclosure, Vaccaro thinks that we need to be really precise on what we mean by “risk” and whose risks we are managing. You have to be managing your own bank’s risks, but now in parallel it is also physical risks—which Vaccaro agrees are often science-based and predictable—that contribute

from far away but are not seen on a balance sheet. It is important to think about how we start to manage this other set of risks although it presents a new and unfamiliar challenge to banks. Regulators need to be able to look at these risks too in order to manage financial stability overall.

Galloway asks **Vaccaro** and **Waite** about what kind of supporting infrastructure is still needed to get to a more efficient market or low-carbon investments.

Waite brings up two examples, one from the market and the other on the market rules side. On the market side, the William and Flora Hewlett Foundation supported the Partnership for Carbon Accounting Financials (PCAF) which is “an industry-led initiative of banks and asset owners and managers coming together to harmonize their approach to measure disclosure and reduce the carbon emissions of loans and investments.” We can only manage what we can measure—measurement and disclosure should be mandatory and financial regulators should oversee this. Climate goals can only be met if we change the system in these ways. On the market rules side, Waite says that there are a number of possibilities, including increasing the capital requirements for banks for carbon-intensive lending; more actively embedding equity, diversity, and inclusion; removing red tape around lenders such as allowing credit unions to access secondary capital; allowing credit unions to do more small business lending; among others.

Eubank responds emphasizing again what Gordon and others have said about the importance of strong government policy supporting climate finance.

Galloway reflects on how he is hearing a lot of calls to action to the bank regulator community and is grateful to be part of this conversation and have the Federal Reserve Bank at the table. Then Galloway asks **Vaccaro** to jump in with his thoughts.

Vaccaro notes that much of what is being discussed is systemic. He turns to the example of PCAF that Waite mentioned and how once that group came together others quickly started to follow along. Once something is shown to be easy then it accelerates and people say hey, why not make this mandatory? The same thing can happen in markets, such as in the renewable energy sector, where you can take a long-term approach and build the growth in the market so that it does not need subsidies. Turning back to infrastructure, Vaccaro agrees that there are options like prudential rules, as mentioned by Waite, that bring “polluter-pays” to the finance sector. In terms of managing runoff, we also have to consider how to manage down the portfolio of a bad bank, in this case one with assets that are not performing for society. It is not fair for banks to have to do that all on their own. Finally, in terms of public banks and philanthropy, there is one thing to create the money, but sometimes public banks just finance mature green assets. However, “what’s really needed is to find the ways to be able to have the catalytic capital that’s going to build new markets, to also be able to leverage in citizen and community capital, and that’s where you probably need a diverse structure to be able to bring in the specialist finance institutions, to bring in CDFIs, to be able to have the right ecosystem to support innovation.”

Galloway suggests a rapid-fire round of questions where each panelist quickly identifies the most promising opportunity to de-carbonize investments as well as the most daunting challenge.

Waite says the most promising opportunity is “boring and mundane measurement and disclosure and reduction of carbon emissions” and the most daunting challenge is to create climate jobs in areas that are very oil and gas dependent.

Gordon says that disclosure is both the biggest opportunity and biggest challenge.

Smith similarly says that data is both the biggest opportunity and biggest challenge.

Eubank jumps in to emphasize the importance of disclosure for everyone across the board, not just banks.

Vaccaro says that the biggest opportunity is “pivoting the target-setting that banks make into real practical strategies to help clients de-carbonize.” The challenge is in managing the runoff; there is a lot of legacy business that would have done things differently if they had known what they know now. This uncomfortable situation is a systemic challenge that will lead to some tough policy decisions.

Gordon jumps in to add that another opportunity that has not yet been mentioned is that we are not talking about simply replacing oil jobs with solar jobs. The approach has to be de-carbonization across all sectors of the economy which presents a tremendous opportunity.

Galloway describes that the final half hour will be spent addressing questions from the audience. The first audience question is for Eubank: How quickly can we expect large financial institutions to pull back from projects that are causing active harm from a climate standpoint?

Eubank describes that Citi and other banks have taken steps toward this starting with coal. They started limiting their credit exposure to coal mining companies in 2015 and updated the plan in 2020 to also include disclosures and commit to cutting this exposure in half by 2025 and to zero by 2030. Citi also made the decision in the last year or so to stop financing new coal power plants and expansions. These are all first steps.

Galloway puts forth the next question for anyone to jump in on: How would a price on carbon affect your analysis of climate risk? Are there any regulatory changes that you would ask for from financial regulators in an incoming Biden Administration? From your perspectives, what could regulators do quickly to remove barriers to good climate finance?

Eubank responds by first explaining that carbon pricing is helpful because it gives more certainty for both banks and also companies. The Federal Reserve Bank has already been considering joining the Network for Greening the Financial System (NGFS), but Eubank thinks it would be great if financial regulators in the United States could tap into what international regulators are doing so that there is a consistent set of expectations globally.

Smith adds that although financial institutions can speak with their clients about de-carbonizing, it is really helpful if those conversations are being driven among the industry level. Smith sees this as being most beneficial as sector-by-sector conversations since each sector is so different.

Gordon underscores what Eubank brought up regarding the need for a clear and consistent policy framework, noting that California has been consistent since 2006 and only improved which has been an important signal. One of the challenges around carbon pricing is that it is very political, which means it changes all the time and is hard to keep in place. Carbon pricing is a way of embedding the external costs into the system.

Waite points out that even in California where there are these more ambitious standards there are pension funds that have increased financing in coal since they are only subject to global policy regimes.

Vaccaro adds that it was challenging, but possible, to get collaboration on carbon pricing across the European Union so it could be done across the United States. A key piece, though, is that the carbon price must be reflective of the actual costs. In terms of the new Biden Administration, Vaccaro comments that it would be good to create a broad plan through federal legislation and then lay out more specific pathways sector by sector, while recognizing that there are uncertainties. An important role for the Fed is to look at monetary policy flow and recognize that while positive green finance plays a role, the incumbency bias toward existing options must be considered. It is also important to acknowledge, as the European Central Bank has, that no one is “neutral,” everyone has agency.

Galloway shares the next question, which is for **Waite**: What is your view on potential legislative action to increase the required minimum distributions for donor-advised funds and private foundations? Could this be a source of funding via program-related investments for CDFIs and other climate lenders?

Waite explains that currently in the United States there is a 5% spend out minimum for private philanthropy and foundations and the question is about whether or not that 5% should be increased. Waite thinks it would be good to do, but to the second part of the question, she does not think it would be a significant source of funding. Waite says that “there is a role for this pool of capital, but it is relatively small compared to the nature of the problem.” The primary sources of capital needed, in addition to public spending, are large asset owners and managers and banks.

Galloway shares another audience question, which is for **Gordon**: Your discussion of impact sears our hearts and minds. To the focus of this event, it harms low-income and communities of color the hardest. Given this, what do you wish the banks and bank regulators should or could do?

Gordon connects the disproportionate impacts to vulnerable communities back to the historic and continued underfinancing and perception of risk in certain communities by the banking infrastructure. There is a need to examine the assumptions being made in financing and lending decisions. As she describes “even in California with a pretty progressive banking sector we still see underinvestment in businesses run by people of color and women, underinvestment in communities of color, underinvestment in rural communities versus urban.” These communities and places need to be part of this economic transition.

Galloway gives the next audience question: How does the financial sector interact with climate scientists? Is it mostly through climate translators/consultants? Could we create a dedicated communication system between climate scientists and the financial sector?

Eubank says that you do need some internal folks with at least a basic understanding of climate science, but you are not often going to have someone with a PhD in climate science. So, it is important to partner with other groups and work with consultants. We are doing some training internally on climate risk, but it is not training on climate science. There are also communities of practice for banks to share information.

Smith adds that it is very important that goals and investments are science-based. It is also an opportunity for large financial institutions to build expertise and become experts in climate finance. Banks can expand their advisory practice capabilities in this area and focus on their role as relationship managers to engage clients on climate.

Vaccaro jumps in agreeing with Smith that it is an opportunity for banks to ensure that everyone who has a client understands climate so that they can have those conversations. For example, Steve Waygood at Aviva Investors has called for a climate finance version of the Intergovernmental Panel on Climate Change (IPCC) which helped translate climate science to policymakers. If there was a similar program to translate climate science to finance, we could develop thresholds, a shared basis, and common understanding and definitions. This could be a starting point that is improved upon over time.

Galloway says the final audience question is about metrics and how impact is defined: How are any of you accounting for the possible human rights or non-climate environmental impacts of some of the projects being promoted by green bonds? For example, a railroad expansion in the Brazilian Amazon which could contribute to agribusiness expansion.

Both **Eubank** and **Smith** respond to say that this is already how banks have been looking at risks and impacts. The idea of “social and environmental risk” encapsulates all of these impacts (biodiversity, human rights, etc.) and is generally how banks are already thinking about financing projects.

Gordon adds that we do need to also consider the economic impacts and raising the floor on the economy so that we do not revert to cheaper and more harmful behaviors. We need to consider how we can ensure that we all can afford to be a part of this transition.

Vaccaro notes that while social and environmental risk is often integrated, the impacts may be less integrated. Some organizations are now looking at mapping their impacts to the Sustainable Development Goals (SDGs) as a way to get at wider impacts. It is also important to consider the positive impacts along with the negative. If financial institutions reflect these findings back to their client base, they can help identify ways clients can improve and stimulate network learning. These are some latent tools that banks can use to add value to their clients in terms of sustainability.

Waite ends with some closing remarks. She emphasizes that all elements of “ESG”—environment, social, and governance factors and metrics—need to be embedded in investment decisions. As Gordon mentioned, we need buy in from people and workers because we need to make this work for everyone. Climate change makes everything worse for everyone. We have to break away from the inertia of our carbon-intensive infrastructure and develop a new normal. There is a lot that has been discussed in this session that are ways the market and market rules can be changed to accelerate this shift.

Galloway thanks the speakers and closes out the panel.

Climate Risk and the Housing Market

Panel Moderator: **Jesse Keenan**, Associate Professor, Tulane University, School of Architecture

Panel Speakers:

- **Dave Jones**, Director, Climate Risk Initiative, UC Berkeley Law School Center for Law, Energy & Environment
- **Margaret Van Vliet**, Principal, Trillium Advisors
- **Nuin-Tara Key**, Deputy Director, Climate Resilience, California Governor's Office of Planning and Research
- **Laurie Schoeman**, National Director, Resilience and Disaster Recovery, Enterprise Community Partners
- **Kate Simonen**, Executive Director, Carbon Leadership Forum, and Professor and Chair of Architecture, University of Washington
- **Lindsay Owens**, Fellow, The Great Democracy Initiative at the Roosevelt Institute

Jesse Keenan, the moderator, opens the session by introducing the panel. Then he turns to Jones to start off with introducing himself.

David Jones, Director of Climate Risk Initiative at UC Berkeley Law School, also currently serves as Senior Director of the Nature Conservancy. Jones starts off by saying that he was asked to speak to how insurance markets are interacting with the housing market. He says that the fundamental problem is that as climate change accelerates (and there is an increase in perils such as floods, wildfires, drought, etc.) we are seeing greater losses in the insurance sector. At some point the risks and losses become "so high that the private insurance market can no longer sustain those losses and will have to either exclude those perils from coverage or pull out of markets." Using wildfires in California as an example, we have seen home insurers retreat significantly; in some places impacted by fires, there has been a 61% increase in nonrenewals of insurers. Affordability becomes a significant barrier for low-income folks in particular. Jones then outlines four innovations to address growing risk and keep insurance available:

- The first is a pilot project called Wildfire Partners in Boulder County, Colorado, that has established third party verification of a home hardening standard related to fire. So far, every home that has participated and met these standards has been renewed. Essentially, a home hardening standard is being linked to the provision of insurance.
- The second innovation is a forest resilience bond piloted by a nonprofit called Blue Forest. "The idea is to raise private capital to fund better forest management and treatment to reduce severe wildfire risk" and then using the economic benefits to pay off investors.
- The third innovation is a Nature Conservancy initiative on wildfire resilience insurance that takes advantage of eco-forestry practices to reduce the prevalence and severity of forest fires. They are currently exploring ways this could be integrated in the investment sector.
- Finally, insurers are also exploring the idea of community-based insurance, which would move away from individual home insurance to insuring at the city or town level. This strategy would allow for the capture of community hardening approaches to reduce risk and the cost of insurance. Any premium savings could then be invested in more community hardening measures to further mitigate risk.

Next, **Margaret Van Vliet**, Principal at Trillium Advisors and long-time public servant, introduces herself. It is her view that “lasting solutions that we all need to climate adaptation and housing run through local government.” She notes that while it may be easy to point to land use and zoning land for housing, it does not stop there. Counties, cities, and special districts “are not set up to think and act regionally, much less globally.” This is exacerbated by perpetual, deepening budget challenges that make it hard for governments to act proactively or preventatively. Van Vliet has thought a lot about how the financial sector can help local governments be in a better position to bring in maximum federal resources and attract private capital for housing. For example, we can help municipalities think more holistically, and consider new and unique ways that their assets, such as excess land, could be leveraged. In particular, assisting local finance and treasury folks “to model scenarios and weigh risks and benefits could be super helpful, as was the case in Sonoma County.” Another important piece is promoting collaborative governance to combat the siloing that often occurs. Finally, Van Vliet says we need “to make it safe for locals to take some measured risk to drive systems change.” One example from Van Vliet’s work is the creation of a new joint powers authority between Sonoma County and the city of Santa Rosa that was “an experiment in collaboration that allowed for a more significant regional housing agenda than what had been in place previously.”

Next to introduce herself is **Kate Simonen**, who is the Executive Director of the Carbon Leadership Forum as well as a Professor and the Department Chair at the Department of Architecture at the University of Washington. Simonen sees her role on the panel as representing the building sector. The building sector is key to reaching carbon goals since it is responsible for about 40% of global greenhouse gas emission through operating buildings (powering, heating, cooling, etc.) and another 11% of emissions through the process of manufacturing building materials. We need to build new buildings better, retrofit existing buildings, and change how we make building materials. The Carbon Leadership Forum “envision[s] a place where we get to carbon zero by 2050 for all buildings, both making and operating them, and in order to do that we need to get to zero carbon of new buildings really in the next 10 years.” The opportunity for housing is that it is a place where it is already possible and practical to make zero carbon operating buildings today. From Simonen’s perspective, new building construction should be currently setting more ambitious targets than what we have currently. She concludes that the building sector knows how to do this work economically: “we just need to up the challenge.”

Lindsay Owens, a Fellow at The Great Democracy Initiative at the Roosevelt Institute, opens by saying that she will cover some steps regulators can take given the systemic risk that climate change presents to the housing market. She focuses on what she calls “the potential for a climate-triggered housing crash.” The stage for such a crash is set by the growing impacts of climate change, the large number of folks living in high-risk areas, and the high and increasing value in properties in high-risk areas despite that risk. Experts have drawn parallels between this climate risk and the sub-prime meltdown of the Great Recession, although the physical destruction associated with climate events means that a rebound is not anticipated as it was with the Great Recession. Historically and presently climate risk is largely not written into the rules of the housing market, but there are ways to embed it in pricing, appraisal standards, disclosures, etc. Owens has looked into the role that federal regulators might be able to play in mitigating a climate-triggered housing crash and has identified the Federal Housing Finance Agency (FHFA)—which regulates Fannie Mae and Freddie Mac—as a promising avenue. Fannie and Freddie hold the guarantee of \$6 trillion in debt which makes this a significant policy lever. Additionally, changes could be made by FHFA without needing Congress which would avoid dealing with congressional

gridlock and other political issues. Most importantly, not only does FHFA have the ability take this on, but Owens argues that they are legally obligated to through “their dual obligation to ensure the safety and soundness of Fannie and Freddie and to foster a liquid national housing market.” Owens highlights two related policy recommendations:

- “FHFA should invest in asset-level data on future climate risk across all perils.” Much of these data already exist and could be put together and made publicly available.
- Once FHFA have those data, they can do a climate audit of Fannie and Freddie through modeling the scale and scope of the climate crisis across perils and regions.

Laurie Schoeman, National Director of Resilience and Disaster Recovery at Enterprise Community Partners, then discusses her work which is focused on existing affordable housing. Although they know there is also a shortage of affordable housing, there is a strong need to preserve and protect existing affordable housing because it is very difficult to rebuild. Schoeman gives the example that after Hurricane Ike only about 10% of lost affordable housing was replaced. Communities are losing workforce housing and facing enormous challenges presented by a changing climate. Frontline communities (those that are the first to be impacted by disaster and take the longest to recover) have been already challenged by decades of policies that have impacted their ability to get investment and funding, particularly through policies such as redlining and disinvestment. Schoeman is encouraged by coming changes to the Community Reinvestment Act (CRA) that would help support these communities better. Schoeman then notes some prominent trends in her work:

- There is a need to think about how we define resilient housing, particularly as it relates to not just the extreme risks, but also the chronic climate risks. For example, their Keep Safe Miami pilot project is working with the city and other partners to create common guidance for affordable housing owners to build resilience.
- We are also thinking about what kind of capital we need to bring in. “For affordable housing we are going to need patient capital, capital that is more often in the form of a grant or a direct subsidy or a revolving loan.”
- We are also looking at ways to create co-benefits as we build resiliency.
- Finally, we are working with partners such as Fannie Mae to create guidance for business continuity and affordable housing resiliency so the entire industry can move forward toward resilience.

Nuin-Tara Key, Deputy Director of Climate Resilience at the California Governor’s Office of Planning and Research, hit on two key messages in her opening remarks. The first is that California, as in many other places, is facing many crises at once including housing availability, housing affordability, and climate. The second message is the importance and value of planning, land use, and thinking holistically about housing and climate. California is facing a housing shortage and, as Schoeman mentioned, there is a need to preserve existing affordable housing. Much affordable housing is in high-risk places and people are also continuing to move into high-risk areas. As catastrophic climate events (such as wildfires, flooding, and drought) are increasing, more funding is dedicated to emergency response leaving less money for building resilience and preventative measures. COVID has also exacerbated impacts on state budgets and has influenced where people are moving and living. Key also emphasized what Van Vliet had mentioned about the importance of a regional, as well as holistic and intersectional, approach.

Finally, Key sees the public sector as playing an important role in ensuring that efforts to address climate risk do not deepen existing inequity in housing.

Keenan turns to ask **Jones** a question about wildfire risks. Keenan notes that while data on flood zones is readily available nationally, fire does not have the same articulation of geography and risk. Keenan wonders if we could get there with fire and how insurance companies might respond.

Jones opens his response by explaining that in California the organization CAL FIRE does map out areas of the state with moderate to severe wildfire risk. He notes that there are also plenty of other datasets out there with information about wildfire risk. The problem is not necessarily the lack of maps or information, but rather getting insurers to take up the strategies empirically proven to reduce risk at the home-level and community-level into their underwriting models. Most insurers do not even take risk mitigation into account in their risk score models. This is an opportunity for insurance companies to update their risk models.

Keenan follows up, noting the tension he sees between the proprietary nature of risk models and the demands for a consumer heuristic. He asks **Jones**, is there a role for the state to mediate with some kind of standardization so that consumers can get an idea of what insurance companies are thinking about? **Jones** responds by noting that in California the Department of Insurance does not receive filings of any of the underwriting models or risk score models that insurance companies are using, so there is no review or approval process. Jones proposes that at a minimum these models should be filed with the state. He also notes that there are some proposals to have the state of California set up a public risk model, which would be another potential public role.

Key jumps in to give her thoughts on potential public roles. Her office has started a partnership with the Department of Insurance to discuss ways to get insurers to consider community-level resilience measures in their models. Something that has emerged in these early conversations is the need to get insurance companies and local governments on the same page and understanding each other. In terms of the role of the state related to brokering data, Key notes that California does have a wealth of climate data. The next step is taking that information and making it actionable.

Keenan then asks **Van Vliet** about some recent research that found a relationship between forest fires and foreclosures in California. Interestingly, the research also found that as the size of forest fires increased, foreclosure rates decreased. The hypothesis for why this is happening is because of local coordination between insurers and county officials to rebuild properties as a higher code standard which is also increasing the value of housing. With that in mind, in the long-term “is there an opportunity to think about a more sustainable and resilient footprint in a post-disaster context?” What were the barriers to collaboration in Sonoma County?

Van Vliet describes that in the immediate post-fire rebuilding there is a tension between property owners’ appropriate urgency to rebuild right away and the need to take the time to rebuild better. That is an immediate issue, but there is also the longer-term challenge of the cultural pieces around city and county government. There needs to be collaborative governance, and not just meeting together more often, but also thinking deeply together about risks and benefits.

Keenan turns to **Simonen** to ask, given that sustainability in building is still spun as a luxury, what do we need to get to scale economy? “Is there a role in a Biden Administration for Fannie or Freddie to set a standard for sustainability to help promote those supply chains?”

Simonen says that there are some innovative developers who are currently able to create energy efficient buildings at the same price. Looking at the big picture, it is helpful to set targets a few years out so that there is time to adapt. California is leading with more advanced energy codes, but the entire U.S. does not have progressive energy codes and that is where Fannie and Freddie could step in to set standards. Increasing transparency around operating energy costs is also an important first step.

Keenan then asks **Owens** about climate efforts at Fannie Mae and Freddie Mac. Keenan notes that there has been some movement, but what will these changes look like besides disclosure? “Are things like a climate risk premium or surcharge on the horizon?”

Owens acknowledges that while disclosure is one piece, there are other “more mechanical levers at FHFA’s disposal,” such as their purview around appraisal standards. Pricing is also likely on the horizon at some point. With pricing you also need to consider disparate impacts, which Fannie and Freddie likely will not be able to tackle on their own, so there would need to be some congressional action as well.

Then **Keenan** pivots to the topic of COVID. He asserts that COVID has been a stress test of the housing system that has exposed many cracks that still exist after the Great Recession. He asks **Schoeman** what she thinks COVID might show us about the future of climate.

Schoeman notes that, while it is still debatable, some have argued that COVID is actually a result of a changing climate. For example, Zika was a manifestation of a mosquito strain and was identified as coming from a changing climate. The implication is that we may potentially see more pandemics emerging and we may need to prepare for a world where we are sheltering in place more than anticipated. We will have to reshape housing to accommodate these new realities (including pandemics, extreme heat, and other climate events). Schoeman says that the aftermath of COVID may be more of a long haul, particularly in terms of state budgets and the economic fallout.

Keenan agrees that the pandemic is redefining many aspects of urbanization and rural spaces.

Schoeman adds that the market has responded in an interesting way. “Rents have gone down for the first time in years, we are seeing a higher availability of affordable housing” but “at the same time we are seeing the disappearance of a lot of the jobs.” This is a problematic scenario.

Keenan then begins taking questions from the audience. The first question goes to **Key** and **Van Vliet**: How do we promote regional thinking on equitable resilience in the housing space and how do we head off things like climate gentrification as new investments come down?

Key starts off the response with some high-level remarks. One of the things is the critical need for more capacity even in terms of what people’s roles are day to day. So many practitioners are busy responding to local needs and do not have the space or time to think about a regional approach. In terms of climate gentrification, Key advises that we not only think invest in brick and mortar, but how we also need to invest in people, social capital, and communities at the same time.

Van Vliet agrees with Key, saying that local governments always need more capacity. Van Vliet is encouraged by the changing landscape for civic engagement, particularly among young adults now. It is

important to change how we listen to the public. Public hearings in the middle of the day are not the best opportunities to engage a broader group of community members.

The next question is for **Schoeman**: Are there any resources or toolkits suitable for CDFIs and smaller lenders to analyze climate risk?

Schoeman reports that there is a lending tool for CDFIs that is being developed and will be launched in 2021. The tool will consider both direct and indirect risks posed by climate. Schoeman says that anyone interested in this tool can contact her and she will put them in touch with those developing it.

The next audience question is about the Blue Forest bond that **Jones** described. Are there any other examples? Can you provide some more detail?

Jones highlights that there has been lots of science from the Nature Conservancy and others showing the risk reduction benefits of eco-forestry management strategies. The project is looking at whether or not these benefits can be taken up into insurance modeling to “ideally offer a lower-priced insurance product that reflects the risk reduction benefits of eco-forestry.” The forest resilience bond relies on the same principle that eco-forestry will lead to benefits in terms of avoided losses or positive economic benefits which would be a revenue stream to pay of the bond. Resilience bonds or insurance pricing can be applied to other perils as well, not just fires.

Keenan offers a final question in a lightning round where each respondent will have one minute to respond. He asks what is one thing that folks in the audience can take away?

Key says that one area is better understanding risk, engaging in risk disclosure in terms of the broader community context, and also thinking about opportunities.

Schoeman proposes that federal community investment needs to be more aligned and this is something that CDFIs can play a strong role in. This includes “pre-development, ensuring that there are co-benefits, as well as tracking work happening at the local level.”

Keenan chimes in to suggest that audience members give their input on a notice of proposed rulemaking from the Federal Reserve Benefit on Question 62 which asks if it is a good idea for lenders to get CRA credit for investments in resilience climate adaptations. Please give your feelings on this.

Owens agrees that is a great suggestion. From the perspective of a former Hill staffer, Owens emphasizes the advocacy power that CDFIs have and encourages them to be in conversation with policymakers and leverage their considerable stakeholder status.

Van Vliet pitches for a partial loan guarantee option for local governments to leverage federal dollars but not keep their resources tied forever. It is important “to go in together with a risk sharing mentality and then in three or five years, let them off the hook so they can recycle that capital.” Van Vliet says it is worth thinking about these kinds of innovative credit enhancement strategies.

Simonen highlights the importance of energy efficiency and decarbonizing building operations.

Jones encourages CDFIs to reach out to state insurance regulators and seek introductions to investment teams to offer up climate resilient CDFI investment opportunities. Insurers will be looking for these kinds of investments, so it is a great opportunity for CDFIs. In California they could also advocate to reinstate a tax credit for CDFI investments. Then **Keenan** concludes the session and thanks the speakers.

How to Ensure Climate Finance Is Inclusive

Panel Moderator: **Elizabeth Mattiuzzi**, Senior Researcher in Community Development at the Federal Reserve Bank of San Francisco

Panel Speakers:

- **David Hochschild**, Chair, California Energy Commission
- **Randall Strickland**, Director, Investment Advisory, Cornerstone Capital Group, LLC
- **Michael Mendez**, Associate Professor, UC Irvine
- **Betty T. Yee**, California State Controller

Elizabeth Mattiuzzi, the moderator, opens the session by introducing the panel and speakers. Mattiuzzi outlines that inclusive work is focused both on making sure that positive impacts are shared and ensuring that negative impacts are not concentrated in certain communities. Additionally, we must consider how to find the public and private capital to prepare homes and communities for climate impacts. “Given these complexities, what does success look like for making climate finance inclusive, particularly for low-income communities and communities of color?”

Betty Yee, California State Controller, begins the discussion by saying that she does not believe that we can know what success looks like; rather, success has to be informed by the lived experiences of folks in disproportionately impacted communities. “In terms of defining success, make no assumptions.” Secondly, Yee proposes that we have to be intentional about making climate finance inclusive—we have the tools, but do we have the will? Thirdly, reducing disparities for low-income and communities of color “is not a one-off initiative” so lasting, long-term success needs to be a goal. Often in the public policy world where folks are working with constrained resources it is easy to forget about the long-term nature of the work. “We have an opportunity to future-proof our disproportionately affected communities and populations with decisions that are informed by sound science, but also ground-truthed by the communities to build resiliency, to develop and harness local talent, and to promote community-based leadership.” In terms of intentionality, we need to prioritize these communities and direct funding through place-based and population-based investments. Lastly, “incorporating in every level of decision-making the voices of the communities.” When their experiences are brought to the fore, we can make sure we do not repeat what has not worked in the past. Yee also notes that it is important to allow for trial and error and lots of technical assistance to these communities that have been so neglected.

Michael Mendez, Associate Professor at UC Irvine, opens with emphasizing the importance of how we invest in environmental justice communities, which are those most disproportionately impacted by a changing climate and tend to be low-income communities of color. For example, in California major climate-related disasters, such as wildfires and droughts, in combination with COVID-19 have had cascading and disproportionate social, health, and economic impacts on low-income people of color due to existing structural inequality. Federal, state, and local governments must step up to address climate change “while safeguarding the most socially vulnerable populations.” Mendez also proposes that the private sector has an important role to play in collaborating with government and community partners. Decarbonization should not be the only goal; “innovative policies and investment strategies must be designed and implemented to provide direct benefits to low-income communities of color.” The most important piece to any of these strategies is the “active and substantive participation” of low-income

communities of color throughout these processes. Through his extensive experience, Mendez has developed three guiding principles for equity finance regarding climate change:

1. “Strategies must not only address carbon reduction, but also public health.” Many sources of greenhouse gas emissions are also sources of pollution for low-income communities of color.
2. New clean renewable energy and technologies “must be affordable, reliable, and accessible to all communities in society. Policy design should ensure that clean energy and technologies are not regressive and will benefit and are accessible to low-income communities of color.”
3. “When developing new technologies, they should provide high road jobs for environmental justice communities. High road jobs provide permanent, fair, and family-supporting wages and benefits.” Direct investments in low-income communities of color can stimulate local economies, create jobs, provide climate-resilient infrastructure, and “provide economic mobility options for communities most impacted by pollution and historic investment.”

Randy Strickland, Director of Cornerstone Capital Group, LLC, echoes that the investment community has historically had silos (be it racial equity, climate change, gender equity, LGBTQ rights, etc.) and those silos are finally starting to all come together, which is good to see. Communities of color are disproportionately affected by climate change. Cornerstone Capital Group works with institutional investors to address systemic issues like climate change, like racial equity, gender equity, etc. “We believe that there are capital market solutions to some of the world’s most vexing problems.” We think that you cannot get to racial equity if you do not have access to capital, health care, broadband, education, clean water, environmental justice, criminal justice—all are interrelated and interconnected. “A portfolio that addresses those things will result not only in better performance, but also address systemic problems that help all of society, not just those communities of color.” In order to make more progress, we need to recognize that these investments are not just the right thing to do morally, but they are also better investing. There is also a need to acknowledge the role that history has played and why we are still talking about these issues. “Years and years of housing policies, criminal justice policies, and broad oppression of communities of color have resulted in them not being in a position to transfer assets from one generation to the next and that has had a profound impact on all of society. No society in the history of humankind has survived growing and deep levels of income inequality so it is incumbent upon us to address this for the good of the whole nation.”

David Hochschild, Chair of the California Energy Commission, begins by highlighting that the urgency of the climate crisis is greater than ever. Although it may have been a more marginal idea in the past, an equity-focused template for climate solutions is now mainstream. California’s climate investments are very focused on low-income and disadvantaged communities. For example, a newly approved Clean Transportation Plan will ensure that 50% of the \$340 million will go into low-income and disadvantaged communities. There is also a robust clean energy research and development program (\$150 million) where 65% of the demonstration projects will be going into low-income and disadvantaged communities. Another \$80 million program for building electrification will launch this fall exclusively for low-income communities. Hochschild thinks this template is effective, has broad political support in California, and can serve as a model for the country. There is a huge overlap between climate impacts and health impacts, so approaching climate solutions in the right way is good for public health. Hochschild says that this approach is at the core of the strategy in California.

Mattiuzzi asks **Yee** to go into further detail about the role that finance could play in ensuring that climate policy and investment creates jobs and furthers racial and economic inclusion.

Yee begins by saying that finance does play an enormous role and how we place or move capital has a huge impact. From Yee's perspective as a trustee on CalSTRS and CalPERS¹ and as a board member of Ceres, we cannot do this work alone. "From an investment perspective we see banks as being a huge partner in how we get to net zero and ultimately be able to provide the financing and the capital for on the ground initiatives." Both the CalSTRS and CalPERS funds are doing all they can to collaborate to scale up their action on climate, a lot of it through corporate engagement. From an investor standpoint, it is important to first identify the companies that will be "the most resilient in a low-carbon future so that we can really be smart about how we look at our climate-related fiscal risk and our transition risks across all of our asset classes in our portfolios, across geographies, and across strategies." The banks need to ensure that their balance sheets are reflecting climate risks appropriately. Yee emphasizes that while she is glad the financial regulators like the Federal Reserve Bank have spoken about climate risks, the entire system needs to address these risks. Mandating that climate risks be included in disclosures should be part of the financial supervision process. Yee highlights that—given the confluence that Mendez described of disproportionate climate impacts in California with the wildfires, the pandemic, the current recession, and the outcry for racial inequity—the current moment provides an opportunity to discuss how we rebuild better. In her view, CDFIs will be critical institutions in this process and they will need to be adequately resourced. She challenges larger and mainstream banks to view CDFIs as a worthy investment and an existing infrastructure that we can tap into to deliver on the ground. We need equity-centered policies and actions moving forward because "at the end of the day, none of this is going to matter unless we really are doing this to improve the long-term resiliency of communities from both a climate risk perspective but also an economic perspective... How we move on climate will inform what I hope will be a larger economic emphasis on how we build resiliency across all communities."

Mattiuzzi turns to ask **Mendez** about how participation in communities plays out regarding these investments and how to increase benefits while reducing harm.

Mendez begins by noting how energized he is to see that policymakers and investors are now leading with equity. At the same time, it is important to recognize that in California this focus on equity and justice did not always exist and there were severe policy silos in the past. There was conflict, particularly as traditional environmentalists used to have a very reductionist focus on carbon emissions rather than a broader look at multi-benefit policies that consider health and jobs as well. As other states and at the federal level we embark on using a similar equity framework to California, we must understand these historical injustices and balance cost-effectiveness with equity. An equity framing is made real by starting with equity embedded in climate policy from the outset, including a clear definition of equity and identifying populations that policy aims to protect. Other critical pieces of the process are engaging communities from the beginning and defining clear outcomes including how those outcomes or co-benefits will be measured. In summary, there needs to be the recognition of historic injustice, then climate change policies can be made real through "a mission of equity, ensuring community engagement, defining outcomes, and then measuring those outcomes."

¹ The California State Teachers' Retirement System (CalSTRS) and the California Public Employees' Retirement System (CalPERS) are retirement systems in the state of California.

Mattiuzzi then turns to **Strickland** to ask—given his 25+ years of experience in designing impact investments to have a social and environmental impact—what has worked well and where do we need to put more work in to reduce carbon emissions and increase the resilience of low-income communities and communities of color?

Strickland starts off by saying that CDFIs are the easiest way for investors of any size to help solve problems within communities. “People can help just by banking with a CDFI.” CDFIs’ mission makes them “the definition of an impact investment” and they are able to do a lot on the ground in communities. Larger institutional investors can make demands that their investment consultants and managers invest in companies that are implementing pay equity, have diversity programs, are disclosing their emissions, and are working toward improving their environmental, social, and governance (ESG) investment. Research has very consistently shown that factoring in ESG helps you outperform the market and other investors. Other things that they can invest in are infrastructure, municipal bond offerings, affordable housing, education, and requiring companies to have more lenient hiring practices for returning citizens (such as the Ban the Box initiative) to build resiliency in communities. These factors are all interrelated and should be part of the investment decision-making process. This is not just the moral thing to do, “it does also improve one’s bottom line and helps in the long run to help our society reduce carbon emissions, [and] help vulnerable communities.”

Mattiuzzi follows up to ask if there are any principles or resources **Strickland** would like to shout out?

Strickland lists a few including the Principles for Responsible Investment (PRI), the Sustainable Accounting Standards Board (SASB), and the Global Reporting Initiative Standards (GRI Standards). The website called Impact Metropolis now has lots of information on sustainable investing and free resources for investors. The PRI was originally developed by the United Nations (UN), and the UN has some other free resources too. A quick Google will yield many free resources.

Yee adds that California has led in this arena, particularly in the climate risk space. Both pension funds (CalPERS and CalSTRS) underwent a carbon footprinting of their global equities portfolio and revealed the high concentration of carbon-intensive companies. This is what led to the Climate Action 100+ Initiative which now has global engagement with the top emitters to address climate risk and develop transition plans.

Strickland emphasizes that CalPERS and CalSTRS have been way ahead in this area and is hoping that New Jersey, where he lives, will follow California’s lead.

Mattiuzzi asks **Hochschild** about efforts in California to bring clean energy to low-income communities.

Hochschild starts by saying that “the electric grid in the U.S. and in California, in particular, is ascendent as a climate solution so a huge number of the climate solutions we are pushing are through the grid.” California’s grid is now 63% carbon-free and has been greening quickly because renewable energy technologies are now winning due to recent rapid cost reductions, particularly in wind and solar. In California, the largest source of greenhouse gas emissions is from transportation, which is why electric vehicles have been a focus. “The good news is the industry is scaling rapidly” and now California’s top export is electric vehicles. They are currently doing a statewide assessment of where the need for electric vehicle infrastructure is highest and opportunities to accelerate this transition. It is a work in process that will roll out differently across the state and across the country, but this is the future—every

major car company is developing an electric vehicle. Hochschild makes the point that though California has been criticized for its climate policies, its economy “has significantly outperformed the rest of the United States.” In terms of disadvantaged communities, clean transportation also presents a huge workforce opportunity and creates jobs.

Mattiuzzi opens the next question up to all of the panelists. Excitement around climate finance in the past (such as in 2009) has not yielded as much as promised. Is this going to be the moment where we really invest in training people for green jobs like solar installation?

Hochschild jumps in to say that there are different cost thresholds for these technologies and that rooftop solar installation has already crossed the threshold and is now growing without state incentives. “We have more employees in the solar industry in California than we have in all of our electric utilities combined. The cost trends for clean energy technologies are pretty much all going this way. As costs continue to come down, adoption and growth will increase.”

Strickland also chimes in to state the importance of pay equity in these companies so that senior management does not have disproportionate earnings. In addition to that, “how do these companies treat and uptrain or upscale or retrain the employees most vulnerable to things like automation?” For example, as grocery stores move to self-checkout, what are those companies doing to upscale those employees who are disproportionately women and people of color? There is also the question of how educational institutions are dealing with the future of work and what skills future jobs might require.

Yee speaks to Mattiuzzi’s question of what is so different about today as compared to in 2009. First of all, as Hochschild has mentioned, we now have gotten to economies of scale. Yee is also encouraged that companies are responding to the convergence of the pandemic, the recession, the outcry to address racial equity, and climate concerns. However, it would be better if these responses were wrapped up in a strategy that consider human capital management and think about long-term viability of workers as work is changing. Yee is hopeful that companies will look at how to transition to become, as Mendez mentioned, high-road employers. Efforts could even consider different business models that include worker ownership. Although we are not there yet, it is an exciting time. “At the end of the day we are working with finite resources” but human resources and human capital have not been fully tapped which will help us level set going forward.

Mendez adds that in addition to decreasing technology costs, there are two other important elements at play: social movements and intergenerational conflict. Social movements have pushed companies toward more sustainable practices. We also see the power of youth asking for swift climate action. As youth enter the workforce, middle management, and upper management we will hopefully see them bring positive change to these companies.

Strickland also adds that over the next 20 years we will see the transfer of wealth that the smart investment community is reacting to. “This next generation of investors is much more purpose-driven and much more aware of the issues of climate, issues of race, issues of gender, and equity as a whole and they want that incorporated in their portfolios. This generation will be the next group of trustees of these large pension funds.” Strickland says that he is hopeful although, like Yee, he is disappointed by the slow pace of change. There are still people who are not on board and need to be convinced that considering climate, race, and gender is important to their fiduciary responsibilities.

Speaking of pension funds, **Mattiuzzi** turns to a related audience question: How has your work been affected by the recent Department of Labor (DOL) ruling "that pension fund managers must put retirees' financial interests first when allocating investments, rather than other concerns such as climate change or racial justice."

Yee first responds and says that the ruling changed very little since they are already down that road and not turning back. "When we think about the long-term value creation proposition, I don't know how anybody could think about going back." Yee does not anticipate a retreat and hopes that this DOL ruling will be reversed.

Hochschild adds that there is increasingly alignment between climate and sound investment strategies.

Strickland also agrees, saying that given the strong data, more and more fiduciaries will take climate issues into account because it makes financial sense.

Mattiuzzi shares another audience question: "Shouldn't all finance be fostering inclusivity, not just climate finance? How do we expand standards of inclusive and equitable finance to all capital streams?"

Strickland is first to address this question. He says that there is only so much direct investment in climate finance (such as wind farms) that you could have in a portfolio anyway. "Every portfolio should have a diverse array of investments across different asset classes, across sectors, across industries." Aside from considering the greenhouse gas emissions of a company or institution, you can also look through the lens of sustainability at their hiring practices, pay equity, investment practices, their supply chain, water conservation, etc. Considering these factors benefits both investors and society in general.

Yee adds that the discussion has been focused on equity as it relates to people, but there is also equity as it relates to place. The consideration of equity can also be bringing capital to places that need it.

Mattiuzzi puts forth a related audience question: Can you speak more directly to ways to address racial not just income issues for climate finance?

Mendez starts off speaking to experience in California with targeting investments not just in terms of people but also place. The zip code or census tract that you live in really determines life outcomes. California has a large cap and trade system that has generated \$5 billion over the last several years—50% of which goes directly to targeted low-income communities of color. Again, this goes back to embedding equity, identifying target populations and places, developing metrics, and measuring outcomes to develop anti-racist climate policy and climate finance.

Yee adds that we do not talk about race enough in the policy space. In California, the ban on affirmative action has been used as an excuse to ignore talking about racial disparities. "We spend too much time dancing around it and coming up with solutions that fall short of what we're trying to address."

Mattiuzzi highlights the importance of looking at place-based solutions that consider intersections of concentrations of nonwhite populations, health issues, pollution, etc.

Yee adds that it should always be informed by the science and that the science backs this up every time. All of these things are related, and we cannot be afraid to own the data, facts, and lived experiences of those communities.

Mattiuzzi agrees that there is a need to combine place-based and people-based solutions. She then puts forth the next audience question: “How can we most effectively get the benefits of clean and renewable energy to low-income consumers and households?”

Hochschild says that California has invested a lot in energy storage and much of this has gone into low-income communities of color such as Native American tribes and have been very successful. In his view, the strategic role for government is to come in at an early stage and provide incentives and subsidies that support adoption of green technologies in low-income communities and communities of color. Governments incentivize a technology to get it to maturity, “then it’s off and running.” That has been the strategy with low-income rooftop solar and with building electrification to reduce indoor air pollution associated with gas appliances. As there will likely be some form of a Biden stimulus package, this is an opportunity to partner with the federal government to have climate-aligned and low-income-focused investments such as weatherization and home efficiency upgrades. There are also a lot of installation jobs needed for these projects that would help with economic recovery.

Mattiuzzi reflects on the poor air quality situation in California over the summer and how she was able to invest in an air filter but that many folks might not be able to do so.

Mendez adds that we also have to be thinking about where we are building housing with respect to emissions. Often times available space for housing is next to freeways, which also contributes to air quality concerns. Mendez also sees energy efficiency as not just about rooftop solar, but also about building affordable housing. California was one of the first in the country to make this connection between climate and affordable housing. We also need to think about building new LEED efficient affordable housing units. In general, we need to think about multiple forms of equity that can reduce carbon emissions.

Mattiuzzi echoes that resilience is not just about reducing emissions, but also about the ability to withstand extreme heat, poor air quality, etc. Mattiuzzi shares an audience question directed toward **Yee** and **Hochschild**: How can states or governments help CDFIs get the capital they need to make solar and other interventions more accessible to low-income communities? How can we bring more of these physical interventions to low-income communities?

Hochschild mentions that he is also seeing an audience question about whether or not community solar or shared solar is an option for low-income communities, and it definitely is. As of January 1 of this year, California mandated solar on every new build (with some reasonable exemptions). This important feature of the California energy plan prevents the need for building more large-scale power plants. Creditworthiness is one of the key issues with making solar and other interventions accessible to low-income communities. There has been progress on making rooftop solar more accessible in California. Right now, “the average solar customer in California is a moderate-income customer,” largely in part due to the substantial decreases in solar costs. In Hochschild’s view, the goal is to provide a range of potential options (PACE programs, solar lease, attractive rate design, etc.) and then let the market sort it out. Crucially, solar incentives are continuing for low-income customers although they have concluded for mainstream customers.

Yee adds that there are a lot of different players that support CDFIs, like the federal CDFI Fund, private capital, and foundations to some extent. There are current efforts in California to create a state public bank and, as it is currently proposed, Yee does not think it is a prudent idea. However, because of this

ongoing discussion, Yee has been looking at the existing infrastructure of CDFIs across the state. Some of the federal programs like the Opportunity Zone Programs could be revisited to consider climate. Regarding support for CDFIs, “there is more that we can do to increase the level of commitment from all these sources and be more strategic about where capital goes and how it gets deployed.” The state can also step up with the California Infrastructure and Economic Development Bank (IBank). The tools are already there; the challenge is how we use them more strategically and effectively.

Mattiuzzi asks **Yee** to expand on the IBank for those who are outside of California, in particular regarding their climate finance efforts.

Yee says that there is not yet a specific role around climate finance but that she would like to see IBank get involved. She thinks it is time to refresh what the overall IBank strategy and priorities should be.

Mattiuzzi invites **Strickland** to jump in on how we can get climate financing to low-income communities.

Strickland agrees that there have to be incentives and also says there is still lots of room for education of “why it is important, how it fits within one’s portfolio, how you can actually get money into CDFIs in a way where you can spread out your risk—there are certain pools or investments where you can put your money in and it is spread out across several CDFIs... there are ways for institutional investors to get the same returns and more impact, it’s just a bit of creativity.” Social impact bonds directed toward communities of color are another place where the philanthropic community can get involved and partner with government and the investment community. The philanthropic community can get their money back when investments work out and regrant it or reuse it rather than money being gone once it is granted out.

Mattiuzzi then shares the next audience question: Would it be a good idea for non-profit organizations (e.g., Grid Alternatives) to restructure as B Corporations to receive equity investments to support job creation and climate action in underserved communities?

Hochschild is “a big fan of B Corps” and finds them to be a nice way to “blend public purpose with private enterprise.” For example, the utility in Vermont is a B Corp and has been really successful. Grid Alternatives is a great organization and Hochschild thinks they could operate as a B Corp. Regarding shared solar, Hochschild then also mentions that the original purpose of many of these projects was to clean up home power production but that is already being achieved anyway since the grid itself is greening so rapidly. In a few years they will hit 75% clean energy on the grid. He notes that shared solar makes the most sense when a facility or campus wants the resilience of energy storage with a microgrid.

Mattiuzzi pivots to ask about the role of local governments in an equitable and just climate transition.

Mendez says, “this is really where the rubber meets the road” as we think about how to transform our cities and neighborhoods. We need buy-in and input from local elected officials, local residents, and local taxpayers to create climate action plans. However, there are policy silos based on expertise (public works, city planning, building and safety, etc.) and we need more holistic thinking to implement new technologies. Regionally, local governments need to think together and pull together financial resources. There are also ways to use local taxes (such as a sales tax in Denver or a tax on barrels of oil produced in the city of Long Beach) to fund local climate projects in low-income communities of color.

Mattiuzzi wraps up with a lightning round question for each of the panelists: What is the most exciting thing on the horizon for equitable and just climate finance? And how can the banking sector, particularly banking regulators such as the Federal Reserve Bank, help you move toward those exciting goals?

Yee says, “The most exciting aspect is seeing all the new emerging voices for climate justice.” In terms of what the banking community can do, it is important for them to walk the walk, step up, and really embrace the seriousness of climate risk.

Mendez closes with the three p’s: people, place, and power. Like Yee, Mendez is also excited about the cultural movement, particularly the divestment movement that youth are pushing forward. The biggest thing happening right now are these very engaged groups advocating for change.

Strickland echoes what was said about young people. As a faculty member he gets to connect with so many intentional and extremely engaged young people. They are already thinking about how they plan to invest their money and what companies they want to engage with. In terms of banks, they need to acknowledge that climate change and racial inequity are systemic risks affecting their bottom line.

Hochschild is most excited about the results of the presidential election because having an incoming administration that understands the urgency of the climate crisis and the need to address inequity is important. Hochschild proposes that we all need to focus on how we can all be better citizens and restore our fidelity to truth, to facing the facts, and to listening to science. This has manifested with the COVID pandemic and the climate crisis is similar. This issue is larger than climate finance, but it will be important going forward.

Mattiuzzi closes out the session by thanking the panelists and audience.

“Action-item” Initiative

Panel Speakers:

- **Michael Swack**, Director, Center for Impact Finance, Carsey School of Public Policy, University of New Hampshire
- **Ivan Frishberg**, Director of Impact Policy, Amalgamated Bank
- **Fran Boait**, Executive Director, Positive Money / Climate Safe Lending
- **Kerry O'Neill**, CEO, Inclusive Prosperity Capital
- **Keith Bisson**, President, Coastal Enterprises, Inc. (CEI)
- **Cathie Mahon**, President & CEO, Inclusiv
- **Dana Clark**, Vice President of Lending, Nutmeg State Federal Credit Union
- **Ian Galloway**, Manager, Community Development Finance, Federal Reserve Bank of San Francisco
- **Elizabeth Mattiuzzi**, Senior Researcher, Community Development, Federal Reserve Bank of San Francisco
- **Eric Hangen**, Senior Research Fellow, University of New Hampshire

Michael Swack introduces the session and describes that first there will be pitches for each of the two action items. Then each event attendee will be able to pick the group of their choice and join that virtual action item discussion session.

Then **Ivan Frishberg** and **Fran Boait** give the overview of the first action-item—policy and industry pathways to climate safe lending.

Ivan Frishberg, Director of Impact Policy at Amalgamated Bank, begins the overview of the first action item on pathways for climate finance to decarbonize lending in the banking system. Both Frishberg and Boait are a part of the Climate Safe Lending Network (CSLN) which is a learning lab network also developing policy frameworks, bank action programs, and a corresponding regulatory pathway, all with the goal of aligning lending to the Paris Climate Agreement. Frishberg notes that Amalgamated Bank is not a member of the Task Force on Climate-related Financial Disclosures (TCFD). While “risk is 100% the right frame for us to be looking at climate change, there is also a very big question about how we measure and mitigate risk in a way that is most impactful.” For Amalgamated Bank, as a national bank but not a huge bank, “TCFD wasn’t for us the right way to start addressing climate risk in our portfolio or for our clients.” Over the last four years many large financial institutions have been engaged in TCFD work, yet at the same time financing into the fossil fuel sector has increased every year—with the big four U.S. banks leading the way. “How we assess risk and how we respond to climate risk in the financial sector is probably one of the key questions.” We will discuss this further in our small group discussion. The point was made that the required emissions reductions, and therefore cuts in financed emissions, in the near term is significant and dramatic, but does not manifest itself in temperature changes for many decades in to the future. The ability for financial firms and policy makers to address risk so far in to the future is challenging when the length of CEO and board tenure, business plans, loan and investment terms are all significantly shorter than climate risk timeframes. In order to address systemic and potentially catastrophic risk to the economy and financial system in the later part of the century, the corporate and policy response both have to force actions that might seem unwarranted in the current context. Frishberg references this as Mark Carney’s note to the Tragedy of the Horizon.

Then **Frishberg** turns it over to **Fran Boait**, the Executive Director of Positive Money and also a member of the Climate Safe Lending Network. Boait focuses her introduction on what regulators can do on climate finance. She notes that it is very reassuring to hear the Federal Reserve Bank speaking on climate risk and joining the Network for Greening the Financial System. “It’s clear that regulators, within their current mandates, can act now on climate. That’s true here in the U.S. and also across the world.” For example, the Federal Reserve Bank is charged with ensuring the safety and soundness of the banking system and promoting the overall stability of the financial system, which climate risk threatens. “We need regulators to acknowledge that the climate risks of tomorrow, both transition and physical, are dictated by the policies of today.” There is emerging international consensus that the complexity and uncertainty of climate risk is not fully quantifiable and that traditional risk modeling approaches are insufficient. New forward-looking, scenario-based models need to be adopted, and we also need to go beyond modeling to adopt a more holistic approach. Climate risk needs to be incorporated into regulatory disclosures by individual institutions, but there also needs to be larger international coordination and collaboration to mitigate structural climate risk and build resilience into the financial system as a whole. Central banks and regulators have both a role to play in this coordination and an opportunity to examine their own balance sheets and lead the way in incorporating risk management and green prudential policies. Some of these strategies will be explored in further detail in the breakout session. Boait concludes by emphasizing that there is no one player who can fix this and that collaborative approaches will be absolutely key.

Next, **Cathie Mahon**, **Kerry O’Neill**, and **Dana Clark** describe the second action-item which is building a financing platform to provide clean energy to low-income communities.

Cathie Mahon, President and CEO of Inclusiv, “a national network of community development credit unions focused on financial inclusion and equity and designing innovative solutions to community challenges.” CDFIs, community banks, and credit unions can play an important role in climate finance. The pandemic has highlighted how vital “the network of community lenders is to getting out capital broadly and deeply and really for getting capital out to build more inclusive economies.” The focus of this action item will be on how to activate this network of community lenders to expand climate finance in an inclusive way. An important piece of this is training and building the capacity of community lenders. To that end, they have been working with partners to develop intensive learning programs starting with the Solar Lending Professional Training Program. Another piece is getting the needed capital and investment vehicles to enable community lenders to bring new climate products online. Early adopters have proven that these are high performing, high-quality loans but more support is needed to support growth. The final piece is that “we need to also look at building and expanding infrastructure and the systems that enable us to deliver this lending to as broad a marketplace as possible.” Today in this action item we will be digging in deeper to one particular solution, which is the Smart-E program. Mahon then passes it off to Kerry O’Neill.

Kerry O’Neill, the CEO of Inclusive Prosperity Capital, gives an overview of the Smart-E platform. The Smart-E loan program “is a tool to help us address the existing single-family housing stock in the U.S. with a focus on low- to moderate-income homeowners to direct climate-friendly upgrades into our communities—that could be solar, efficiency, HVAC, resilience, a range of products.” This can help stabilize and preserve affordable housing and also reduce energy burdens. The program is rooted in local communities and leverages local lenders and local contractors identified through a vetted contractor network. Smart-E aims to direct capital that exists in local lenders into climate finance,

particularly in communities that may otherwise not have access. This standardized unsecured loan product has been “battle tested” over years in three different states (Michigan, Connecticut, and Colorado) with 16 active lenders, over 1,000 participating contractors, and “over \$250 million of loans have been originated helping 22,000 homeowners.” O’Neill then passes it off to **Dana Clark**.

Dana Clark, Vice President of Lending at Nutmeg State Financial Credit Union (a CDFI credit union), speaks from her perspective as a local lender who has participated in the Smart-E program. Clark describes that they were an early adopter of the Smart-E program, starting in 2013. While it is technically an unsecured program “it actually performs more like a secured program so for Nutmeg the program was a win-win in a lot of ways.” It was a great way to partner with other local businesses. Clark says that there were a lot of benefits with the program, some unanticipated, and she is happy to go into more detail in the breakout session.

O’Neill closes by saying that the breakout session will explore ways of scaling up this standardized approach across the country, some technology solutions they have developed, and credit enhancement support.

Policy and Industry Pathways to Climate Safe Lending

Keith Bisson, President of Coastal Enterprises Inc. (CEI), gives an overview of the three high-level themes that came up in the discussion on policy and industry pathways to climate safe lending:

- The integration of inclusivity and equity in climate finance is crucial. Systemic risk does not treat people equally since injustice is baked into systemic failures. “We need to hold government and others accountable on climate justice more broadly.”
- There are many co-benefits that come with climate-positive investments such as infrastructure. It is important to make social investments at the same time as climate investments rather than focusing only on climate.
 - From Bisson’s perspective working at a CDFI, CDFIs present a way to engage directly in the real economy through loans and relationships, which they can also highlight for larger financial institutions and policymakers.
- It will take trillions of dollars per year to compliment public funding and make the climate transition happen. A climate-related Community Reinvestment Act (CRA), or something like it, could unlock capital for community-related investments as the current CRA law has done.

Building a Financing Platform to Provide Clean Energy to Low-Income Communities

Eric Hangen, Senior Research Fellow at the University of New Hampshire, then gave an overview of the discussion related to the Smart-E platform and “how to scale it and bring solar to low- and moderate-income customers on a broader scale.” During the breakout they learned that everyone’s experience with the program has been very low losses and high loan performance. We talked through the mechanics of the program, such as how the contractor vetting works and how regulators are treating it (so far it has not been the subject of examination). Then the group also discussed the loss reserves and credit enhancements, particularly how long credit enhancement needs to stay to support the product. Based on what they are seeing with the high performance, it should be possible to dial that back over

time. In terms of pathways to scale, a breakthrough idea was to start a cohort program consisting of five to ten cities or regions. Another thing that was brought up to follow up on is setting standards to validate energy savings to ensure that customers are getting what they were promised.

Then **Swack** closes out the session and the formal part of the roundtable, thanking panelists and those who made the event possible.

This material is based upon work supported by the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy (EERE) under the Solar Energy Technologies Office (SETO) Award Number DE-EE0009009. The views expressed herein do not necessarily represent the views of the U.S. Department of Energy or the United States Government.