THE BROOKINGS INSTITUTION

WEBINAR

BUILDING RESILIENCE: HOW STRUCTURAL INNOVATIONS CAN HELP COMMUNITIES DEFEND AGAINST DISASTERS

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WESSEL: Good morning, I'm David Wessel, director of the Hutchins Center on Fiscal and Monetary Policy here at the Brookings Institution. Wanna welcome everybody online to today's event, Building Resilience, How Structural Innovations Can Help Communities Defend Against Disasters. It's a joint venture of our Brookings Metro Program and Economic Architecture. Not so long ago, climate change was something that experts warned about. But few of us actually felt it, at least in the U.S. But that has changed. The severity of hurricanes in Florida, the floods in North Carolina and West Virginia, tornadoes in the Midwest, wildfires in California, the issues of availability and affordability of homeowners insurance, which presents macroeconomic challenges to the mortgage market and the housing market, and also microeconomic challenge to individual homeowners and prospective home buyers.

Now, as a society, we are not moving fast enough to address the underlying causes of climate change, the amount of greenhouse gasses we're emission, so while we continue to work on climate policy, we also need to focus on mitigation and resilience. And that's the focus of today's conversation. I think it's just worth, for a moment, reflecting on the dimensions of the damage that's been done by adverse weather events because it's really pretty startling. In 2024, there were 27 confirmed weather or climate disaster events in the U.S. With losses exceeding $1 billion each in the US, 27. The average over the previous 45 years was nine such events. The average for the most recent five years was 23 events. So, the total cost of these 27 events, the billion-dollar disasters in 2024, was $183 billion. And just to compare that to some number, you may be just to put it in order of magnitude, that NOAA, which oversees the weather service, their entire budget is $6 billion. Now this useful tally billion-dollar disasters, which is kind of an indicator for our dashboard on how much damage climate change is doing has now been killed by the Trump administration. And as many of you know, In April, FEMA ended the Building Resilient Infrastructure and Communities program, which was grants to state, local governments and Indian tribes to fund mitigation. So it is really important at this moment for us to focus on what communities, local governments and individuals can do to help build resilience to protect us from climate change while unfortunately the federal government has, for the moment, lost interest. So today's program is really well designed to suit that thing, and I want to now turn it over to Stuart Yasgur, who is founder and principal at Economic Architectures. Stuart has spent the last 15 years or so thinking about innovations that use market forces to address social challenges at large scale. Economic Architecture is a 501c3 non-profit. That's very involved in trying to identify structural solutions to the kind of problems we face today. So thank you all for joining us, and I'd like to welcome Stuart to the virtual stage.

YASGUR: Thank you, David. Hello, everybody. My name is Stuart Yasgur. As David mentioned, I lead Economic Architecture, and I'd like to thank you all for joining us today. Right now, we're at the beginning of hurricane and fire season here in the U.S., and unfortunately, that means that in the months ahead, we are likely to see extreme weather and major disasters impact communities across the country. To give us all a sense of how common this is, according to FEMA, in 2024, a major disaster was declared every four days. Unfortunately, 2024 was not an exception. Every year, disasters are impacting more and more communities across the country. In fact, increasingly, we're seeing families get displaced and homes destroyed in regions that weren't even considered at risk 10 years ago. Today, an estimated 137 million people, 41% of the U.S. population, live in areas that are regularly affected by major disasters.

From California to the Carolinas, from Texas to Maine, we've seen incredible efforts to respond to those disasters. But we need to complement those efforts with a growing focus on decreasing the number and magnitude of disasters. We need to break the cycle of disaster emergency response. We need a bill safer and more resilient homes and communities, and that will require a broad range of new innovations that can create change at the structural level. Unfortunately, as David mentioned, the federal government seems to be stepping back and seeding its leadership role. That means that we're going to need more innovations at the state and local levels, and we need the market to play a larger and more constructive role. Remarkably, we're already seeing innovators lead the way. For example, as we speak here today, Tim Vortreit and his colleagues over at the Altadena Collective are restructuring the supply chains so that homeowners in Altadela can recover from the horrendous fires and restore their community, while at the same time building more resilient homes that would be less vulnerable to fires in the future. This is also why Economic Architecture and the Brookings Institution are in the early days of developing what we hope will be a long-term initiative that is focused on the kinds of structural innovations we need. It is why we are so excited today to speak with two incredible innovators who demonstrate that we can take concrete action. In sharing about their work, they are extending each of us an invitation to take a step forward, to get involved, to participate in creating safe, healthy, and resilient homes. To help anchor this conversation in facts, I'd like to invite Manann to share some of his recent research.

DONOGHOE: Hello, everybody. My name is Manann Donoghoe and I'm a senior research associate at the Brookings Institution Center for Community Uplift. Now just bear with me while I share my slides. So today, I'm going to be presenting some of our latest research on the changing risks of disasters, extreme weather, and other climate change related events, focusing on these, on how these impact people and communities, jeopardizing lives, livelihoods, and financial security. I'm gonna start by speaking to what this new and changing landscape of risk, what it means for how we collectively should be responding and adapting to these changing risks.

But first, I wouldn't be a researcher if I didn't give you a definition. So I want to start by, what do we mean by resilience? So resilience has a specific definition within the disaster management and climate impact sciences. Resilience is the capacity of social and economic systems and ecosystems to cope with a hazardous event, a trend or a disturbance, responding or reorganizing in ways that maintain the essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation. Now I just want to spend a second on this to highlight two important aspects of that definition that link to this conversation that we're about to have. The first is social, economic, and ecosystems. These are systems that are linked and a resilient system is one in which all three of these are strong together. The second is that phrase maintaining a central function while having the capacity to adapt. This is important. We don't just want communities to recover to where they were before. That keeps us trapped in a cycle of response and recovery. A resilient community is also one that can adapt over time, reducing the likelihood of future catastrophic impacts.

So that said, why does this matter? Why are we talking about resilience today. To put it directly, we don't live in the same kind of climate, literally, than we did even 50 years ago when most of our disaster management systems at the federal level were created. So this graph on this slide shows a number of federally declared disasters from 1953 to 2024, which have trended upwards since at least the 1970s. In our world today, while we don’t know when or where a disaster will strike, we can expect large disruptive shocks annually. Already this year we've had several. We've seen the LA fires and recent tornadoes in St. Louis, for example, and we're only just coming into hurricane and fire season. Foremost, disasters and extreme weather, amplified by the impacts of climate change, they displace families and communities. Data from the Internal Displacement Monitoring Center shows that floods, hurricanes, and other events are displacing an annual average of 1.4 million Americans. In 2024, an estimated 11 million were displaced, primarily from storms and floods and wildfires. These numbers represent millions of lives interrupted or destroyed. There are people who've lost their homes, people who are out of work, and saddled with new found debt as their assets are destroyed.

Now, while some regions across the U.S. are inevitably experiencing greater impacts because of where they're physically located, their physical geography, states like Texas, for example, Louisiana, Florida, and California are all regions in the U.S. that have higher risks of extreme events. However, no region across the U.S. is immune. This map presents census data on the percentage of employer businesses that lost revenue because of extreme weather in 2022, the most recent year for which we have data. Nationally, 9.81% of all businesses, 9.91% were impacted by extreme weather. The impact of businesses employed roughly 28.3% of all individuals working at employer firms across the U.S. In some metropolitan areas, impacted by hurricanes Ian and Nicole that year, the proportion was closer to 50%. And I wanted to share this data on employer businesses because they're often community anchors and lifelines. These employer businesses, they provide jobs and income and crucial services for communities. They're grocery stores, they're infrastructure maintenance teams, they're the jobs and organizations that help to keep cities running. When these types of businesses are disrupted, it impacts vulnerable communities most, like renters, like casual workers who don't have a financial safety net fall back on.

Now not only are impacts increasing, they're also changing in ways that make our disaster management systems and infrastructure in ways they're not prepared to handle. Heat waves, for example, which are currently not covered by the federal disaster declarations, are trending upwards. So this graph shows the proportion of land area affected by extreme temperatures from 1910 to 2022. Now, while not causing the types of immediate destruction, a highly visible destruction like hurricanes, heat waves nevertheless impact families and communities, increasing, for example, the cost of cooling and compounding underlying health conditions. Heat waves are often called a silent killer. So in 2023, more than 2,300 Americans died from heat waves, which is substantially higher than those impacted by floods, hurricanes, and wildfires combined. So yes, we're seeing the number and severity of disasters increasing, but disaster impacts according to our research are actually more a product of social and economic vulnerability rather than the number of events. And these are connected to local and state policy histories that have shaped land use and other social and economic challenges that affect communities like poverty and unemployment.

So take a heat wave, for example. This is a climate impact which is incredibly local, with temperatures can literally vary from one side of a neighborhood to another side of a neighborhood. So a federal policy like redlining, for example, which diverted private and public investments away from black majority neighborhoods, resulted in those neighborhoods today having fewer parklands and more covered surfaces which raise temperatures. So today a neighborhood that was redlined historically is between 5 to 12 degrees hotter than a non-redlined neighborhood is. In other words, redlining has shaped the quality of the built environment for many neighborhoods, which in turn shapes present-day climate risks. Other social and economic factors too, they also amplify the severity of disasters. Factors like wealth and income, access to healthcare, affordable housing, quality of the build environment, the density of civic infrastructures, all these factors together can make the difference between extreme weather. Becoming a disaster that displaces families or entrenches poverty. These factors mean that we can't just treat disasters as only a physical problem with an engineering solution. They require longer-term structural changes that address a range of intersecting issues. And to demonstrate just how impacting social economic factors can be and how they can relate to inequities and inequality.

Just wanted to share some of our recent research that maps relative vulnerability and exposure to climate disasters across the U.S. So this graph shows an analysis of the environmental defense funds climate vulnerability index. A value of 0.5 indicates that a community sits within the average range for climate vulnerability compared to other areas within the U.S., while a score closer to 0.6 means a substantially higher vulnerability than average. In our research, we find that Black-majority neighborhoods across the U.S. are actually less likely to be exposed to extreme events, meaning that, for example, hurricanes and other threats are less common on average, but still these neighborhoods are more likely to be vulnerable to impacts. And this is because of those other factors that I mentioned earlier, like housing insecurity. These mean that even a small disaster can have an outsized impact on those communities. I've had the relatively sobering job in this presentation of presenting on the risks, and our panelists have the more enjoyable job of sharing their promising solutions that could engender wider positive structural changes.

But I wanna just uplift one positive example to provide a taste of the opportunity from addressing these risks in a more structured way. Since 2016, Alabama has spearheaded the Strengthen Alabama Homes program, which has helped to increase the state's resilience to extreme winds. So the program works with the state insurer who provides grants of up to $10,000 to help single-family homeowners fortify their roofs and bolster against resilience, at the same time as reducing insurer payouts and thus the insurance premium for wind damage. The program has covered 7,000 properties or thereabouts and helped homeowners to avoid rapidly rising insurance premiums and the state as well to avoid insurers exiting neighborhoods at large. But more importantly, it's been an incredibly successful program. It's engendered changes, for example, in building codes in the state. And it's led to the launch of similar programs in other high-risk areas like Louisiana, Mississippi, and other states. This is not a new sweeping disaster management system. It's a housing and insurance program that's acting as a pathway to increasing Alabama's resilience. Now, I know that Stuart and our panelists are going to speak to more examples from their own work. But I want to end by saying this. Too often, we think about climate change and disasters without talking about the opportunity that could come from taking action. Responding to climate impacts shouldn't come as a cost on our aspirations. It's an opportunity to reimagine our homes, our infrastructure, our neighborhoods for more equitable, inclusive, and resilient communities. Thank you very much. I'll hand back over to Stuart, who's going to introduce our panelists.

YASGUR: Thank you, Manann. And that was fantastic. And I think a really powerful framing for the conversation we're about to have. And now let me go right into introducing two remarkable innovators who are joining us today. Let me start with Ashon. Ashon Nesbitt is CEO of Florida Housing Coalition. He leads the organization's housing and affordability and production and preservation initiatives. Ashon is a respected community nonprofit leader who was previously the chief program officer and technical advisor with the Florida Housing Coalition, where he led the Community Land Trust Institute and the Center for Racial Equity. He championed the expansion and professionalization of community land trusts throughout the state and has overseen the development of the nationally recognized and first of its kind community land trust certification program. Earlier this year, Ashon was named a spotlight innovator in the Valuing Homes of Black Communities Challenge, which was hosted by Economic Architecture in the Brookings Institution. Welcome Ashaun. Thank you. I'd also like to introduce Shalini Vajjhala, who is the executive director of the PRE Collective and is a nonresident senior fellow with Brookings Metro. She's also a nationally recognized infrastructure and climate resilience expert who designs, funds, and finances community-centered resilient infrastructure solutions. She's founded the design firm Refocus Partners, co-founded the Atlas, an online platform for local government collaboration, and has held multiple positions in the Obama administration. Welcome, Shalini.

VAJJHALA: Thanks, Stuart.

YASGUR: Uh, Ashon, uh, to get things going, um, what inspired you to focus on creating permanently affordable housing that's also resilient to climate and climate and disaster risk?

NESBITT: Thanks, Stuart and I guess I'll start kind of breaking that down to the first component, the permanent affordability piece and I'll add climate resilience permanent afford ability really came up came about through just a number of years of studying community change, even going back to being a student in college and trying to understand the dynamics of that. And just the importance of housing affordability as communities change over time, maintaining opportunities for folks that maybe have continued to invest and stick with the neighborhood as investments come in from the outside and then having that opportunity to benefit from those improvements that happen. Of course, we do wanna see. Positive neighborhood change that often results in displacement. So how do we get out ahead of that and thinking about ways to make sure that there is some permanent affordable housing in a community as it changes as prices go up or other things that market forces that create unaffordability over time. I think it's important both for the health of a community, as well as community identity. The climate resiliency piece came in for me in 2017. We experienced Hurricane Irma, which really impacted the entire state. I got an opportunity, if you will, if want to call it that, to go down to the Florida Keys and kind of see it up close and personal. That was ground zero for us in Florida. And, you know, most of the affordable housing for the workforce down there, you know, was. Virtually destroyed. A lot of it was manufactured housing and just wasn't built to current standards. We have a pretty high standard following Hurricane Andrews some years ago. But a lot of this housing predated that. And so to see it destroyed and understanding that those folks might not have the opportunity to come back because of the speculation that that ensued. Being very little develop a land in the Keys, you know, those that became a hot commodity. And so, you know really became clear to me that the resilience aspect of permanent affordability the two go together. And so that really kind of inspired kind of the last seven years of kind of figuring out how do we marry those two. Um, and really create a system by which we're building both, uh, permanently affordable and resilient housing.

YASGUR: That's great. Shalini, many people point to the problems that disasters create and say we need to do things differently, but your work is really at the frontier where people can take action and have a large impact at the individual community and city level. Can you share a little bit about that?

VAJJHALA: Yeah, absolutely. So I think building on what Ashon just said, there are three major things that guide our work at PRE Collective. And the first is that when we get resilience right, success is something that often doesn't happen. The storm hit and the community wasn't wiped out. Ashen doesn't have to go to the Keys and witness the devastation. It's a, this is a really vexing policy problem, right? Because if you think about a public official in the first year, you're applauded. Storm hit, community wasn't flooded. In the second year, your budget likely goes away. And then third year, your staff disappear because nothing has happened. So we need a really different way of thinking about these problems and capturing the value of an avoided loss. A lot of our work in the climate adaptation and the resilience space looks a lot more like early childhood education or preventative health because of that, then it looks like mitigation. So we often talk about emissions reductions or climate change mitigation in the same breath as climate change adaptation. And they're just fundamentally different animals, right? They're place-based and focused on avoided losses versus these kind of tradable technology opportunities. I think the second thing that really drives our work connects back to something that Manann presented, which is just holding people to a status quo or bringing them back up to a status quo after a disaster. In our work, it feels like a complete failure of imagination, right? We should be able to do better. And the status quo isn't serving people well in many places. And so our work at PRE Collective is focused on all that early messy stuff. That you have to do with communities, with homeowners, with renters, and with local governments and state agencies to build what you need next instead of doing the familiar thing and just putting Band-Aids on what you have. And I think the third critical piece of what we do is really that we look to bring together three key building blocks for resilience innovation at the systems level, and that's vision, capacity, and money. I'm an architect by training, an architect and an engineer. And oftentimes we hear, we all know what these things look like in their absence, right? You have vision capacity and no money, that's the most common. Nothing gets built, gorgeous drawings. But the more insidious gaps are often when you're lacking one of the other two. If you lack vision, we tend to get shinier versions of the status quo. Ashton, that's more manufactured housing in the keys. Which may not be what you wanna leapfrog to, right? To keep folks safe and in permanent affordable housing. And in the second instance, when you lack capacity, this is often where people blame government at all levels where delivery and implementation are slow and uneven. So I feel this very personally from my former life at EPA, but the ways that we work on these things is we really look at how do you capture value at the seams of different sectors and the seams at different scales. Where a housing solution might actually connect more directly to water systems or coastal protection than to home retrofits.

YASGUR: That's fantastic and it's really helping us picture what the solution space starts to look like. Ashon, how would you describe your approach to kind of integrating resilience into affordable housing? And why is this integration so important for the communities you work with?

NESBITT: Great question. And so just a little bit of background, and hopefully I'll answer the question. So as an organization, really our core business, if you want to call them businesses, is training, technical assistance, consulting, working with local governments, particularly. And so a lot of it has to do with policy. But also not just in the traditional advocacy space, but more of how policy impacts strategy and carries out and has results on the ground. And so what we're looking at is, and we have a very strong connection with our local governments and communities and their nonprofit partners, is how do we take the learnings and apply them on the ground. It's almost an applied research approach and, you know, how we put these things together, see what comes out and draw those best practices out that both impact how other folks carry out programs and also what should make good policy so that it facilitates more of that. So it's kind of a replication of that around the state and it's kinda influenced through policy. And so, what we're doing here, through our work with Community Land Trust, we've really built that up over many years in the state of Florida, a kind of a deep understanding of the importance of permanent affordability and executing it through the Community Land trust model and integrating that into, integrating resilience into how community land trusts operate and making it a part of their operating procedures and making it a standard through which they operate. That's what we do that through our training, we do that through technical assistance. We also do that though working with local governments and making sure that those things are recognized when they're funding or when they are providing That they understand that it's important so that everybody's kind of moving in the same direction. And so that's really how we're approaching incorporating it. Just really making it a standard. And sometimes I hate to even use that word, because sometimes standards become minimums. And maybe that is the best way to think of it is. Minimum and sometimes we race to the minimum instead of saying that this is the minimum, we're going to go above that. And so, you know, I think, again, you know, make sure that's the standard and even people go beyond that to achieve great results. And as we start to see that build, that momentum build around it, I think we'll start to that replication. And in our state, it's important, you know, that I think that we can reduce the overall risk profile of our state. And have better results for people. And I really love how you said that, Shalini. We can really capture the value of a hurricane not being successful in destroying neighborhoods.

YASGUR: Yeah. And to build on that, Shalini, you've already kind of laid out the way that we need to think differently, that that we needs to think differently about building resilient homes and communities. Can you share with us what some of the lessons are that we should be learning from the work you're seeing?

VAJJHALA: Yeah, I mean, I'll start with an example here. And I think what's lovely about speaking about this with Ashon is just this nesting doll connection between what you do at the home level versus the community level versus the network level in our systems. And one of the places that I love lifting up is the city of Hoboken in New Jersey, which was one of communities. It's a tiny single square mile of a city. Mostly paved and it was incredibly hard hit by Hurricane Sandy over a decade ago now. And I want you to imagine, you know, up to 12 feet of standing water in a little bowl-shaped community and cars floating down the streets. And so we started working with Hoboken back in 2013, so shortly after the floodwaters receded, still very fresh in everyone's memories. And we were able to work with the city to say, well, what do you actually? Need instead of how do we react to this immediate disaster? How can we combine the response to this incredible challenge in this crisis with what you'd proactively like to see in your community going forward? And so what we were able to do is work in the early stages, again, this pre-development phase. So I want you to think about this like the first leg of a relay race. In supporting the city, to really develop the pathway to create a crown jewel of a park, designed like a bathtub. And we were playing with all sorts of ideas in the early days. You know, if cars are already floating down your streets, could we do a parking garage that's designed to flood? So that way you collect parking fees that support your flood mitigation. And it's really that intersection of design and finance where I think we can focus on capturing this value. And I want to give a tremendous shout out to the City of Hoboken because they now have a crown jewel of a resilience park that from those early kind of bathtub days has evolved into a six-acre park that captures millions of gallons of stormwater and underwater cisterns, not parking, and has saved the City an enormous amount of money. So over the course of late 2013, and there were several strong rainstorms that rolled through. New York and New Jersey, and folks from the New York Times sent out reporters to document the flooding in Hoboken. And it didn't happen as a result of this project. And so that's really where folks told the story of the dog that didn't bark, that success that didn't happen. And I think that's where we need more of that.

YASGUR: That's great. I love the reporters going to cover the story that didn't happen because they'd already taken action. And I think what Hoboken did is remarkable for Hoboken, but it also creates an example for others about how we really need to think differently about our infrastructure going forward. And Ashan, one of the challenges is that as we have these innovative new approaches emerging, innovations. By the definition are new and people are not used to them, and people then tend to associate it with greater risk. I think one of the things that you've done in your work is help people overcome some of those early obstacles for those innovations to be taken up through things like standards that you were just talking about. Can you share a little bit more about that and the role that certification can play?

NESBITT: Yes, so we've had the great opportunity to work with our GSEs on Community Land Trust. I think in the not too distant past, it was very difficult for folks that are, say, purchasing homes and CLTs to get loans to purchase those homes. It was very niche, very... Community bank oriented, there wasn't kind of that secondary market wasn't created by and large and the really credit Fannie Mae and Freddie Mac for stepping up and recognizing the importance of permanent affordability kind of in shared equity as a way to both you know, expand home ownership, which is good for their their bottom line, but also, strengthens communities, which is good for all of us. And so we work very closely with both Fannie Mae and a longer time with Freddie Mac to create a certification program for community land trusts, which really says that community land trust meet Freddie Mac's requirements, which makes it easier for lenders to make those loans. You know, one of the challenges with any sort of kind of localized program for lenders is that, you know, they have to actually, you know, review that program, review all the documents, make sure that the program meets their internal, you now, if it's in their internal box and, you, know, if they want to sell those loans to Fannie Mae or Freddie Mac, make that it meets their boxes. And so there's a lot of review processes. So we've kind of taken that burden off of lenders through our certification program. They don't have to do that review of community land trust. We, through our program, through training, through review, make sure that they meet those standards. And so this is really about adding an additional standard or additional aspect of that standard. And really what this boils down to, you know, for lenders and for a lot of folks and space is about a reduction of a risk. And we know that the CLT model on its own is a low risk for lenders because the CLTs there. The CLT can cure defaults on behalf of a borrower. Luckily that doesn't happen very often because there's so much good education and these laws just completely outperform the regular portfolio anyway. And so this kind of further reduces that risk by If you build resiliently, now you have less of a risk of loss. For the homeowner, it definitely reduces that risk of default that so often happens on the market when folks lose their homes and they're unable to rebuild. If you don't have to rebuild in the first place, you've reduced that risk. And so, you know, we're really excited about what this can do. To harp and back to Shalini again. Our goal is to be able to capture that and really document that reduction and say that this is valuable and something that deserves further investment.

YASGUR: And, you know, when you when these new innovations are coming forward and the CLTs, you're building CLTs are building resilient housing, you know, the first cases to support these innovations really are kind of going above and beyond their their individuals are kind of stepping forward. But we need to make this mainstream and that certification by de-risking it, creating standards, helping everybody recognize that this is a common product that can... Uh, go into the secondary markets created by the GSEs, uh, really kind of opens the doorway for, uh- for us to become mainstream, uh potentialists, um, yeah. And Shalini, I think- As much as as important as these kind of big structural innovations are, I think it's hard sometimes for people to recognize them or to imagine what the pathway is from new idea to bring that idea to fruition, you know, I think there's in common imagination, we can think of an IT tech startup or something like that. It's harder for people to imagine how these innovations and what the journey looks like for those innovations. Can you share with us a little bit about the recent the recent news that's coming out of North Carolina?

VAJJHALA: Yeah, and I'll actually start with an entry point for folks who are listening to this discussion, because I think this can seem enormously intimidating, right? You have to work on everything everywhere all at once, and you need, you know, a Sean-like superpowers to be able to see it and do it. I think we've found some very, very simple entry points on the back of that early Hoboken work, actually, and two questions we use all the time in our work, and we use them in tandem. Are we look at a system or we look at a place and we ask, who's losing money because of this problem? That's your financial motivation. Those are your financial beneficiaries. That could be homeowners who are losing their homes. It could be Fannie Mae and Freddie Mac when you get further upstream, that their portfolios are shifting to have greater risk or hold greater risk. The second question we ask is even more important. It's who's suffering? Who's suffering because of these problems? In Hoboken, it was the water utility. It was the hospital that were losing money because of the floodwaters that poured in from underneath the hospital system, for example. Who suffered were people trapped in second or higher story apartments and multifamily buildings who couldn't get access to medication or without power for days or weeks. The intersection of those two, the answers to those two questions, where they overlap. Is where there is opportunity for structural innovation. And so I'll give an example of what this looks like because our early Hoboken work, we realized like, oh, we were designing infrastructure that was measurably reducing risk for all these players, who's losing money side of the equation. We were doing it because of the suffering. But we thought, okay, you can address more suffering if you can actually capture that value. And so on the back of that work, we had been doing infrastructure projects. Hoboken was one of eight cities in an early Rockefeller Foundation funded competition that we ran. And so we had all these examples of real risk reduction projects. And we said, well, where are the ways that we could capture value? And so, we started thinking about this with the... The metaphor of health insurance and life insurance. So life insurance, if you quit smoking, you get a discount on your life insurance you've reduced risk in a way that insurers understand. So we were like, can we do this for resilient infrastructure? Well, like there are a lot of examples also where you don't get a a discount. You join a gym, you call your insurance company and they'll laugh at you and say, good job, right? They're not gonna change your premiums. So we needed to find that sweet spot of how do you measure risk reductions? How do you then show that those reductions are, can be valued in the insurance market or otherwise? And then what's the mechanism to capture them? And so starting back in 2015, a colleague of mine and I developed a version of what's called a catastrophe bond. For those of you who are not insurance wonks, I want you to think about this like a life insurance policy, for example, for a city. The challenge with life insurance is you have to die to get the money. Something horrible has to happen. So you don't actually want it to happen, but you want to have it just in case. We were looking at how these projects could create value and discounts by essentially creating a rebate, reducing your risk, just like quitting smoking. And so that included coastal protections, it included flood mitigation projects. And so in the mid 2010s, 2015 to 2017, we actually created this new financial instrument that we called a resilience bond, which is an insurance mechanism. And just this past month, I need to applaud the folks in the state of North Carolina at the North Carolina Insurance Underwriting Association because they issued a first ever $600 million catastrophe bond with this kind of resilience benefit feature for doing a program of fortified roofs in the State. And so they've invested $100 million in fortified roof, but even better than the value at the homeowner level was they are now seeing savings on the reinsurance that they're able to purchase. Their insurance as an organization, a $1 billion state nonprofit, has gotten cheaper. And they've saved over $130 million. So that's the closed loop, I think, that's possible when you walk this line between who loses money and who suffers.

YASGUR: Yeah, I think that that's a fantastic kind of walkthrough for folks of structural innovations and how structural innovations really change the nature of the relationship between the stakeholders, so that, you know, a place where everybody was kind of worse off can now we can potentially create this kind of virtuous cycles. I'm going to ask a big question as the last one before turning to Q&A. We have all seen changes to federal policy recently. And that could be a whole discussion, multiple discussions on its own, in its own right, but how has that changed, you know, in this kind of solutions oriented conversation, how's that changed how we need to think about how you're thinking about your own work or how we need to thank about kind of moving forward with, with solutions and innovations.

NESBITT: I'll start. I think if there's a theme to it all, or at least what we can draw from it is kind of the importance of local solutions, local resources, you know, kind of seeing that shifting of, I guess, responsibility to a local level. But also, I think that creates opportunity for kind of really looking at local solutions and bringing some resources that may have sat on the side to the table. And so, really, as we're looking at this work, we're saying this is an opportunity to really look at what resources we have or what resources the community has. To bring to bear, to solve or address issues that may have not been brought to the table. We have examples of, you think about Chambers of Commerce, for example, they were really set up for the business community, for example to solve social problems. And so, bringing some of that spirit back. To the work and seeing, hey, you have a seat at the table when it comes to housing. In fact, we need you, you need that ingenuity now more than ever. And some of those resources and here's the opportunity. And so that's really kind of where we're thinking about it, with this issue of resiliency, we think it's still a leading edge issue, particularly on the finance side. Insurance is doing one thing, We know. At some point the mortgage industry is going to follow, but there's a lot of A lot of thoughts, a lot of potential solutions out there that are just kind of on the fringes and we wanna bring them into the forefront, I think. So even with what's happening, there's still a great opportunity and I think still very hopeful.

VAJJHALA: Yeah, I'll channel that same kind of practical hopefulness as someone who made the shift personally from the federal level to the ground up back in 2012. I think one of the things I realized from my time in the federal government was that money wasn't the only thing required for implementation and scale. In fact, it was sometimes a hindrance. And so I'm taking this moment to really focus on the spaces in our portfolio at Pre-Collective on things that are everybody's problem and no one's job. Because those are the spaces where you can align folks for collective action and get really great bang for your buck. So I'll give a shout out actually in parallel to the Chamber of Commerce to folks at green banks across the country at the state and the county levels. So those are spaces where. I think this kind of ingenuity is starting to play out, but there's also the opportunity to build new connective tissue and collective action that gets us to these nesting doll solutions rather than the kind of grant-based federal whack-a-mole that we've seen over the last few years.

YASGUR: That is great, and you know, I've said we just we only shared information about I think we only announced this conversation late last week and but there's been a tremendous response. And that comes with a lot of questions which folks have submitted in advance. So I will pre pre apologize we cannot get to every question that was submitted and but a number of them have been touched on already but maybe just to start naming a few of the questions that were submitted. Um, we have a question from Wilder Kingsley, the acting CEO of Earthscope. How are community organizations and private public sector leaders engaging stakeholders using practical non-politicized language to help communities understand that this is an everyone problem?

VAJJHALA: Um, Ashon, I'll tackle this one first, because I think it goes back to that. Who's losing money and who's suffering. We work everywhere, deep red to deep blue. And it really comes down to, are you trying to solve this problem? Are you trying do something or are you just describing it? And so I'll give an example from the Illinois finance authority, the state climate bank, where we are working now on issues of supply chain resilience. I don't think I've used the words climate change at all in these conversations. Water on roadways and railways is getting worse because of climate change, and it's costing folks money. If we can do landscape scale, nature-based solutions to keep water off of roadways and rail ways, we have a chance to help communities that have historically dealt with basement flooding, people who are living with mold, and to help corporations manage the cost side of their balance sheet. I think that simple basic language targeting problems that people are having today. That are only going to get worse with climate change is an entry point that we have to hold on to. No one eats in emissions reduction. So keeping that anchor is going to be important regardless of the federal climate or how politicized things are.

NESBITT: And you know I would agree with that. Don't have much to add. I think we all, regardless of what you think about climate change, we all deal with extreme weather. We all deal with loss and I think you really hit it. It's kind of talking to people in the language that they understand and what's important to them and really finding out what's that common ground between all of us. And that's I think that's how we're seeing it as how we as an organization are engaging folks. Because these things have brought people to the conversation that historically may have not have been or may have thought of housing generally as a top issue, it's now there. And housing impacting them, what's the language that they speak and what's that thread between all the stakeholders and really finding that. And that's how we're seeing that folks are being effective in engaging those conversations at the local level and us at the state level as well.

YASGUR: Great. A question from Joanna Wozniak-Brown from the state of Connecticut. She asks, often more stringent building requirements have met resistance in constrained housing markets. How do we find the win-wins?

VAJJHALA: I think this is a tough one. Ashon, I might just be buying you time on this one, but I'll highlight the Montgomery County Green Bank in Maryland, because I think there are ways to make doing the hard thing less painful. And so Montgomery County green bank has been doing extraordinary work on energy efficiency and more recently has expanded into doing work on water and resilience or affordable housing. And again, coming back to who's losing money and who's suffering, affordable housing developers are a rare species of endurance athletes, right? Like they are able to work through the most incredibly painful processes just over and over again, to get projects done for the communities they serve. And I think being able to bring properties up to higher standard can feel incredibly daunting. But when you realize that what you're doing is already hard And just. This new approach is unfamiliar, but it's not harder than what you're already doing. We've been able to find ways to walk folks from a triage mindset of thinking about repairs and this reactive way to saying if you're actually able to line up funding and financing, financing in a way that's think of a line of credit. That lets you have the upfront flexibility and capital to say, you know what, when I do that new roof, I'm also gonna make it possible to do solar at the same time. So it's cheaper now or later. It's those kinds of retrofits that I think help us make the higher standard less scary. I mean, a lot of this is about making something accessible and less scary than a daunting mandate when you're already crushed. And so I think those kind of process precedents. Are really important.

NESBITT: Yeah, you did more than by time. I think that was a great answer. I think what we have found is that, particularly for a lot of our rental housing developers, they are already building to a higher standard and probably didn't realize they were building to that standard. And what they kind of needed was, from us, is to show it's really not that much of a cost difference to meet a higher standard. Um, and so, you know, we've been able to, to do that here recently in some, some work we've done, um, just to show you, you're already there. Um, it may be just, uh, it's not, uh you know significant amount more. It's not going to impact you that much more, um on the cost side. Um, in the benefit you get on the backend is, is much, much greater. Um, you now that, you, know, reduce, you know, instance of, of loss. And so, that's really what we've been able to show. And again, it's not even so much of you doing that much different in this case. And so we're kind of lucky in that way, just because our co kind of call for some changes. And she said, if you just go just a little bit further, you'll get this much back in return. And so you know, we just need to keep. Taking that message to more and more places and expanding that. And I think we're going to start to see some differences.

YASGUR: Yeah, and I think that that, you know, kind of is evocative of the practical optimism that you were talking about where, you know, unfortunately, there's a, we're talking about building standards that kind of it's, there are a lot of debates and political points of view that get evoked. But if we focus on kind of how we're really make concretely making progress, we recognize that some of those obstacles are may not be as large as as people recognize, portray them. To be. Next question from Paulo Avila. I believe MOF is Ministry of Finance from Brazil is asking, and we've touched on this a little bit, what innovative financing instruments are currently available to support the development of climate resilient infrastructure, and how can they be scaled to meet the needs for vulnerable communities? You talked a little bit about some of the financing already, but are there others you want to kind of elaborate on?

VAJJHALA: Um, I will elaborate it, but Paula, I suspect this might not be the elaboration you were looking for, which is I think a lot of our plain vanilla financing tools work really well for resilience. We're just not used to using them in the space where we're creating a savings rather than a revenue stream. And so it's more on the project design side where we need to think about how do we do that value quantification and capture? And so I'll go back to my very first comment, which is success is something that doesn't happen when we do a lot of this right. And so we spend a lot of our time making resilience finance look like energy efficiency. You have a bill, you create a savings. And so figuring out who has that bill, I think one of the great failures in this field has been talking about the grand benefits of resilience without anchoring to the beneficiaries. The beneficiaries are your motivated actors. And so I would actually argue that this is not, we don't need more fancy financial instruments. We need more of the big money, plain vanilla, debt and equity tools to be applied to problems where we're creating savings. Long-term savings, long-term value, as opposed to short-term revenue and payback. So I want every coastal protection to look like a toll road.

NESBITT: Yeah, I would agree. I think we don't need a necessarily a new type of product per se, but how do we, you know, use what we already have, you know, something as simple as how do you recognize reduced risk in mortgage pricing, for example, you know, that's working within the system we already have. And so, you know, I agree I would argue for things like that. How do we look for you know, who has the bill, as you said, you know where's the real savings, you know who's benefits from that and how do we, you know work that into the system we already have.

VAJJHALA: And I will give a shout out to Brazil because I think there's been real creativity in, for example, BNDES about thinking about this at the large infrastructure scale. So I think it's at our fingertips.

YASGUR: Yeah, and I would take moderator's prerogative, maybe just to add in is that, you know, and pushback of this is not the case, but I imagine it's neither of what you're saying is that we shouldn't be innovating, but that because the innovation may be useful, like the cap bonds, for example, are, we're really a huge step forward. But that, part of the question for us is how do we also tap into mainstream market mechanisms, like what you enable to shun through? Working with the GSEs so they can recognize that they can finance these kinds of resilient homes through the mechanisms they've already built.

VAJJHALA: No, I think innovation is getting the thing done and scaling by volume, not by size of deal. So like, that's the challenge is these are things are place-based, they're bespoke, and we need to be able to do lots of them in lots of places, not just one large one in one place.

YASGUR: Great, and maybe that's even a great finishing line. Shalini, any last one minute, last line or thought you wanna share?

VAJJHALA: I think just one, which is for everybody who's interested in this space and working on this space, I would really strongly encourage you to lead with what people need now. As much as climate change is a future problem, we are feeling it now. There are things that connect to future impacts now. And so anything you can do to walk from a need to a project to money is going to be more successful than starting with the money or the top down or something abstract.

YASGUR: Ashon.

NESBITT: Yeah, just that working to find that common ground, I think it's just so key right now. And you might have allies where you don't think. There's more people in the city, as the book says, than you think. So find those people and bring them to your table. And be willing to go outside of your usual circle, and you might find what you need.

YASGUR: That's great. And I would kind of use the last question as a kind of transition here, that we have a question coming from a member of the Federal Reserve Bank asking, where are there more opportunities to learn, learn together and look at these kind of concrete innovations. I would use that last question as a setup to mention that this is the first in a series of conversations and talks that economic architecture and Brookings will be doing looking at innovations at the frontier of this issue. Our next session will actually be in person in Washington, D.C. On July 29th, so we invite you all to join us. It'll be, if you've signed up for this, I believe you can also get information about that. We'd love to see you there. We are also having a series of conversations with innovators at the frontier of these issues. And we will be sharing those through a podcast that's coming out in the near future. So please do sign up for the mailing list. We're happy to share information about that as well. And I'd like to take this opportunity to thank you both, Shalini and Ashon, thank you so much for sharing your work and leading this conversation. Thank you, David, for helping to tee us off and give us that large framing and Manann for really anchoring us in the facts of what's happening around us today. Thank you all, and we look forward to you joining us for our next conversation.