

# COMMUNITY-DRIVEN AND RESEARCH-INFORMED:

## Insurance Innovation to Meet Social Needs

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# COMMUNITY-DRIVEN AND RESEARCH-INFORMED: INSURANCE INNOVATION TO MEET SOCIAL NEEDS

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# INTRODUCTION

Recognizing that a public policy problem exists is often relatively straightforward; observing that outcomes are not what we expect or want can be obvious. Diagnosing the causes of a problem is typically harder, requiring deeper investigation and well-designed research to identify causal pathways and link program inputs, design features, or certain behaviors to the outcomes of concern. Innovating to solve a problem, though, can sometimes be quite difficult, particularly when problems are entrenched, simultaneously influenced by many factors, involve a wide range of stakeholders, and rooted in long-standing institutional approaches, policies, and procedures.

This report shares a process of social innovation undertaken to improve the financial recovery of low- and moderate-income (LMI) households from increasing climate disasters.

This report shares a process of social innovation undertaken to improve the financial recovery of low- and moderate-income (LMI) households from increasing climate disasters. The problem to be solved — filling the gaps in financial recovery post-disaster for LMI households and communities — has long been identified and has also been well-diagnosed. Climate-related disasters are occurring more frequently, with more severity, and in places unaccustomed to such impacts. Our systems for financial recovery from these events, however, are failing many of our most vulnerable groups. Our federal assistance programs are insufficient, delayed, difficult to access, and can be regressive (e.g., Billings et al., 2022; Raker, 2023; Wilson et al., 2021). Disaster loans are often the primary tool made available to victims, but many households are denied credit and would find additional debt too burdensome (Collier & Ellis, 2022). And disaster insurance, which should provide a financial safety net, is often too expensive for those who need it most or does not cover some of the most pressing financial impacts, such as higher costs of rent post disaster (Kousky, 2022; Kousky & French, 2022). As disasters threaten to send households into worsening financial condition, destabilizing any gains in advancement and widening inequality, it is clear that new approaches are needed.

Innovation in disaster finance to secure social goals is challenging for many reasons. Innovation is costly in staff time and other resources. Private sector financial institutions often will not be willing or able to incur these costs for a low profit margin product or when the product's success is uncertain. Further, supply-driven innovation may not meet needs or may be targeted toward more profitable market segments rather than social needs. Local government and community organization staff may be closer to the target population and have a better sense of specific needs, but they are often unfamiliar with risk transfer markets or the possibilities for tailored solutions. In addition, they are often already overwhelmed

with existing programs and do not have time or funding to devote to uncertain innovation. Overcoming these difficulties requires time and resources dedicated to innovation and a close, cross-sectoral team of collaborators.

In our case, a group of researchers, members of the New York City (NYC) Mayor's Office of Climate & Environmental Justice and the Center for NYC Neighborhoods, had begun discussing disaster recovery challenges in the context of NYC. We formed a small team to move from discussion of the problem to creation of a solution. We were able to do this thanks to a grant designed specifically for researchers and communities to innovate together, the Civic Innovation Challenge program of the National Science Foundation.

We decided to focus on financial recovery from floods. NYC faces coastal flooding from storms and tides, as well as inland flooding from rainfall and, to a lesser extent, riverine flooding. Extreme precipitation events, which are increasing in the region (USGCRP, 2018), can overwhelm the city's stormwater and sewer system, leading to flooded roads, subways, and buildings. The likelihood of experiencing flooding is greater for lower-income residents (Lieberman-Cribben et al., 2021) and residents of NYC floodplains tend to be working- and middle-class homeowners (The Center for NYC Neighborhoods, 2014).

Here, we document the process that guided our policy innovation in the hopes that our approach can be used by other groups seeking new solutions to their disaster recovery challenges in the face of the growing risk of climate extremes. The report first discusses the broader issue of cross-sector collaboration and team building and then walks through the insurance-based innovation steps in detail, which include: undertaking a disaster recovery needs assessment, scanning the landscape of possible interventions, evaluating options through stakeholder engagement, refining the concept for implementation, and evaluation and learning.

# OUR THEORY OF POLICY INNOVATION: COMMUNITY-DRIVEN AND RESEARCH-INFORMED

Our approach to innovation to improve the recovery of low- and moderate-income (LMI) households from ever-worsening flooding unfolded in five steps:

- **Step 1:** grounding ourselves in the specific, post-flood financial needs of households,
- **Step 2:** scanning the landscape of potential tools and solutions,
- **Step 3:** determining what intervention would be effective and feasible (politically, legally, economically, and socially) across all stakeholders,
- **Step 4:** designing for implementation of a pilot, and
- **Step 5:** preparing for learning and refinement.

We discuss these five steps in more detail in subsequent sections.

All of these steps, however, were guided by two principles: the solution first needed to be community-driven, and second, it needed to be research-informed. On the former, the entire process had to be informed by community needs, perspectives, and preferences. This required ensuring that at each step we had mechanisms for input from key community stakeholders, both informally and formally. For the latter, that our solution be evidenced-based and guided by research findings, we immersed ourselves throughout the process in prior studies about household disaster recovery and evidence on the pathways between program design and outcomes of interest. When research was lacking, the team turned to the informed advice of experts and additional data collection and analysis. Finally, we built into our project ex-post monitoring and evaluation to fill existing knowledge gaps. Both objectives were served by the creation of an advisory board with diverse membership.

The initial project conception brought together representatives from three groups: researchers, the local government, and a community organization. This core team met regularly through the entire process from conceptualization to launch. They were supported by multiple additional partners at different steps in the process,

including two private sector partners, Guy Carpenter and Swiss Re, that were heavily involved in step 4.

The innovation effort was funded by an award from the Civic Innovation Challenge of the National Science Foundation and the Department for Homeland Security. The objective of this Challenge is to fund research-based pilot programs that can be implemented quickly and have the potential for scalability, transferability, and sustainability. The intent of the Challenge is that communities lead a collaboration with researchers, identifying their priorities and innovation needs. Our team was chosen in the initial cohort of grants, giving our team the needed resources to devote staff time to the innovation process. This is critical, as innovation can be time-consuming and dedicated spaces must be created for the process.

**Innovation requires trust and trust takes time to build. Collaboration can advance more quickly and easily when the team already has a strong foundation for their work.**

The grant process had another key benefit: it forced us to clearly define roles and objectives – having this written down explicitly was critical to guiding our process and making the process move smoothly. The grant also forced a timetable on the team, with a requirement to spend four months on concept development and then another year to reach pilot implementation. This was an incredibly ambitious timeline. Our team was able to assemble and work quickly since we had already been working together for several years on climate resilience. Innovation requires trust and trust takes time to build. Collaboration can advance more quickly and easily when the team already has a strong foundation for their work. Of note, a grant process with a quick timetable, such as in our case, does eliminate the ability to explore some innovation options that would take more time to assess and potentially implement.

The team was essentially implementing theories of social innovation and co-creation. Social innovation often refers to the creation of new programs or approaches that address societal needs through a process of exchange and collaboration among relevant stakeholders, including end-users across organizations and sectors (Voorberg et al., 2014). Our team, at our small scale, followed the common progression from idea generation to prototyping and piloting (Mulgan et al., 2007). We are now in the phase of learning to inform scaling and expansion. This report is focused on the innovation process that began with problem definition and ended with the development of the pilot. Pilots are often key to innovation where learning must occur by doing and then adjusted and refined for scaling and expansion.

# 1

## Step 1: Recovery Needs Assessment

A fundamental tenant of our approach was that the solution had to be demand-driven, that is, based in the actual needs of community members. In seeking to improve recovery for the most vulnerable — where physical climate risk overlaps with socio-economic vulnerability — the needs must be clearly defined by the community organizations, local governments, and those they serve. Not only is this approach essential for impact, but it is also necessary to secure demand for any market-driven solution. No one will buy a product they don't need or can't afford — this goes for insurance, as well.

Our team thus began with a post-disaster needs assessment. The objective was to identify gaps in financial recovery from floods, either in timing, type of loss, or for specific sub-populations. This was done by combining findings and insights from multiple sources. We undertook a detailed review of research that had been done on household recovery, particularly for LMI households. We evaluated the existing federal programs, including analyzing data of their operation post disaster with a focus on the Individual Assistance program in the Federal Emergency Management Agency (FEMA) and the disaster loan program of the Small Business Association. We interviewed key stakeholders that had been involved in disaster recovery, both within the local government and other organizations. In addition, the local government agency and our advisory group pointed us to additional resources and interviewees, and also shared their own insights.

This process uncovered many gaps in disaster recovery. In brief, these included:

- **LMI households struggle to afford flood insurance.** Data from OpenFEMA in NYC examined by the research team found that in 2018 there were over 53,000 residential NFIP policies, paying an average annual premium of \$1,439 (in 2019 dollars). Stakeholders noted that costs could be higher and become unaffordable for lower-income residents. This had been documented in prior research for the city (Dixon et al., 2017).
- **Many households at risk of rainfall-related flooding were not aware of the risk and were uninsured.** The high-risks areas mapped by FEMA, where disclosure and flood insurance requirements apply, typically do not capture rainfall-related flooding. The city has mapped storm water flood risk but many residents may still be unaware and unprepared.
- **Federal aid is insufficient to meet emergency needs post disaster.** Short-term federal assistance is only provided following disasters that receive a federal declaration and, even then, help may not be forthcoming for households: from

2005 to 2014, FEMA grants to households were authorized in only 35% of major disaster declarations. When provided, grants averaged only a few thousand dollars. Recent research has also found that these grants are regressive, with both a lower average amount and a lower probability of receiving assistance in more financially constrained areas (Billings et al., 2022). The National Advisory Council to FEMA has noted that FEMA aid programs do not provide equitable assistance, often favoring the more affluent (FEMA, 2020).

- **LMI households are more likely to be denied a disaster loan.** For instance, the research team analyzed SBA disaster loan data for NYC and found that after Hurricane Sandy, 65% of loan applications from households below the median income level were denied, but only 26% were denied for those above the median income.
- **Most sources of funding post disaster, including governmental aid and insurance payouts, could take months to reach households in need.** LMI households struggle to cover disaster costs during these delays.
- **Non-property losses are not well-covered by existing sources of financial support post-disaster, particularly insurance (Kousky & French, 2022).** This includes LMI renters who struggle with help affording higher rents post-disaster (Brennan et al., 2022).

We focused our attention on solutions that could help fill some of these identified gaps.

## 2

### Step 2: Landscape Scanning of Interventions

With these gaps in mind, the research team began a process of scoping possible solutions. The research team reviewed academic studies, as well as government reports and writings from non-governmental organizations, on post-disaster financing, assistance programs, and insurance. We looked at examples and case studies from other locations and reviewed policy proposals that had been put forward previously. The research team combined the results of this search into a policy brief that presented six possible interventions that could improve the financial recovery of LMI households from flood-related disasters by filling some of the identified financial gaps in recovery.

The possible solutions ranged from fully public to fully private. Each required different partners, had different cost and resource profiles, and required different institutional changes. The six policies were:

- 1. Parametric microinsurance:** low-cost and low-limit insurance policies that would quickly pay a set amount based on an observable measure of the hazard and in which the dollars could be used flexibly by the policyholder (Kousky et al., 2021).
- 2. Premium reductions for low-cost flood mitigation:** creating a program of premium reductions to reward households that undertook lower-cost flood mitigation measures, such as elevating appliances and using flood resistant materials in their basement.
- 3. Local flood insurance affordability program:** direct public subsidies from the local government on the cost of flood insurance for income-qualifying households.
- 4. Community assistance combined with a high-deductible NFIP policy:** the local government would provide the first \$10,000 of assistance post-flood, which households could use for below-deductible expenses, and then purchase a high deductible flood insurance policy to cover larger amounts of damage.
- 5. Community-based insurance:** the local government or a community organization could secure flood insurance on behalf of certain residents (Bernhardt et al., 2021).
- 6. Right-sizing insurance coverage:** the local government or a community organization could sponsor one-on-one consultations between households and a knowledgeable flood insurance expert to help them determine the most appropriate insurance coverage at an affordable price point, an approach that had been used previously with success (Sherman & Kousky, 2018).

To read more about these six options, see Kousky and Wiley (2021).

### 3

## Step 3: Evaluating Options through Stakeholder Engagement

In order to choose between these options, the project team designed a stakeholder evaluation process. This involved more than 30 semi-structured interviews with a range of experts across sectors and topics, exploratory analyses, focus groups with multiple stakeholders, and consultation with our advisory board. In these conversations, we asked participants to help us evaluate the proposals against the following criteria:

- feasibility
- effectiveness
- cost

- sustainability over time
- administrative burden
- viability of needed partnerships
- interaction with existing city policies and programs

It quickly became apparent that one product or program could not meet all the identified recovery gaps. The initial engagement conversations thus focused on how our different options targeted different populations and needs and how to determine which needs our team should focus on in this project. Given the fact that we had limited time and resources, we had to narrow our focus and choose a specific gap we wanted to address. Our engagement process helped us narrow our focus to LMI households facing emergency needs after a severe rainfall-related flood event. We had learned that rainfall-related flooding was a peril that was growing with climate change and most households at risk were not informed and not required to have flood insurance, since this peril is not included in the FEMA flood maps. The severe flooding in NYC from the remnants of Hurricane Ida further prioritized this focus for the team. Losses from flooding can be wide-ranging, including repairing and replacing damaged homes and contents, as well as many non-property losses such as the need to replace lost income from business interruption due to the disaster, clearing debris, or paying for higher commuting costs due to transit interruptions. When these immediate needs are not met, we were told that LMI households can be forced to engage in costly coping behavior, such as not paying bills or deferring important expenses that can have longer-term negative impacts on the household. We thus targeted getting fast and flexible dollars to these households. We decided that our intervention would not be designed to provide all the dollars needed for a full and complete recovery, but to target the timing gap between when a disaster hit and when other sources of funds began to arrive for households, often months later.

The engagement process also identified several hybrid options in addition to our initial six proposals. Using our evaluation criteria, we were also able to rule out several approaches that could simply not be undertaken within our budget or within the timeframe of the grant. These binding constraints helped define our opportunity space. The most critical of these was that NYC as an entity was not going to purchase an insurance policy nor standup an assistance program in the near future, due to lack of sustained funding and several regulations, such as those around procurement and providing benefits directly to residents, which would make implementation difficult in the near term. We also could eliminate some other options due to cost constraints or a lack of needed partners. For example, while there was substantial interest in direct-to-household microinsurance policies, no

firm provided such insurance policies for flooding in NYC and we found none willing or able to quickly offer such policies.

After eliminating options that were not feasible for various reasons, the core project team then reviewed the remaining options against the other criteria using insights from the stakeholders. Based on the resulting discussions, we narrowed in on the concept of the Center for NYC Neighborhoods purchasing a parametric risk transfer product to finance an emergency, post-flood assistance program. The Center had previous experience with providing household disaster grants after Hurricane Sandy and could build on this experience. The team had also determined that parametric insurance would be a useful tool since the payout could be made quickly as it did not require difficult or time-consuming loss adjustment and had been used successfully in several models the team had identified globally.

**4**

### Step 4: Design Refinement for Implementation

Once we had the broad outline of the approach, the project team worked with private sector partners Guy Carpenter and Swiss Re on policy design refinement and implementation. We began with a mapping of our concept at a high level, as shown in Figure 1.

The steps taken to move from broad concept to implementation and the lessons learned are detailed in our companion report (Kousky, Wiley, et al., 2023), and we refer readers to that report for a deeper discussion. This work took close to a year and was the majority of our effort. The process involved developing the specifics of the emergency grant program for fast activation after a flood, designing an innovative rainfall-related flood trigger for the parametric policy, choosing the payout thresholds based on modeling of prior floods, negotiating contracting, working with the Center’s board, and final purchase of the policy.

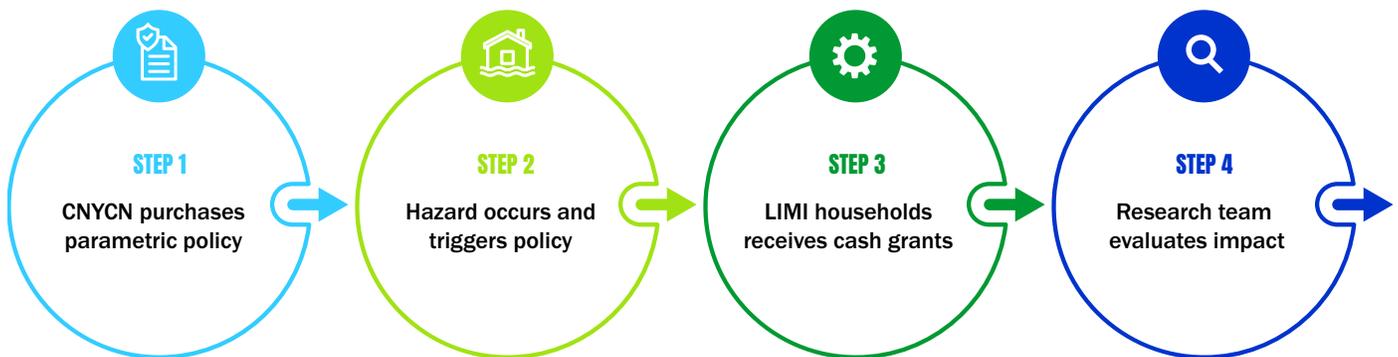


FIGURE 1:  
**Concept Overview**

## 5

### Step 5: Preparing for Learning and Adjusting

Our effort was always conceived of by the project team as a learning pilot. Innovation typically requires iterating on a concept to refine ideas and learn-by-doing. Many potential setbacks in designing new programs and products cannot be anticipated and must be addressed as the work progresses. As the need for improved financial recovery to climate extremes becomes more urgent, testing approaches, and learning from them to improve design going forward, is critical. The project team thus reflected, after the purchase of the parametric product, on the process of design and launch to identify lessons learned for replication, which, again, are discussed in a companion report (Kousky, Wiley, et al., 2023).

The research team also developed a strategy for post-flood evaluation, should the program be activated by a flood. This research plan was designed to evaluate both how well the program operated, and also the impact of fast and flexible dollars on the recovery of the benefiting households. The team developed a logic model to guide evaluation, and planned for how to collect needed data through post-flood surveys. To date, the program has not yet been triggered by a flood. Having the research plan in place, however, will ensure we do not miss an opportunity to learn from the program's activation.

# CONCLUSION

As climate tests our existing disaster policies and financing approaches, many of which were designed for a world of lower and stationary risk, and as evidence mounts about the households that slip through the cracks of our existing programs, innovation to provide more complete and equitable recoveries from climate disasters is paramount. The five-part strategy our team utilized could be harnessed in other locations to develop new approaches to securing broader financial resilience from climate disasters tailored to other specific populations, perils, and contexts. The two pillars of community-driven and research-informed can guide such efforts.

By committing our policy innovation to be structured by these two pillars, we ensured an approach that would be in the best interests of the community we sought to serve. Creating a reciprocal partnership of trust should be a foundation for all such endeavors. In our case, the Civic Innovation Challenge of the National Science Foundation and the Department for Homeland Security provided catalyst funding and structure that enabled the launch of our iterative process of policy design. More such challenges, competitions, and backing structures will be needed as spaces for fostering policy innovation.

Innovation is not easy: if it wasn't hard, it wouldn't be necessary. We had to remind ourselves that designing new approaches involves detours and is never completed without a few wrong turns. It is important for team members to not view these as setbacks, but rather as necessary learning. Indeed, our team is still learning. We have not solved all the problems and the design requires additional refinement and new paths if we wish for a program with long-term sustainability and broad replicability. But we hope our journey can help jumpstart others on the path to innovation. Learning across multiple pilots, not just one, will be essential to identify which types of programs are the best fit for various needs.

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