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Insurance Industry Initiatives to Collaborate and Partner for Catastrophe Resiliency

By Anne Obersteadt, CIPR Senior Researcher

Initiatives to improve our nation's resiliency to natural catastrophes have accelerated in recent years. These efforts have been prompted in large part by the increasing financial impact of natural catastrophes on our society. Increased building and population growth in areas of higher natural hazard risk have made our country more susceptible to losses from natural catastrophes. A warming world is expected to bring more climate variability and the potential for more extreme weather events and higher economic losses. Given the complexity and interdependent nature of these risks, initiatives to increase resiliency are best achieved through collaboration. This article will highlight several of the unique initiatives involving the insurance industry underway in the U.S.

◆ The Role of Insurance

Insurers provide a critical part of the solution in mitigating against natural hazard risk and the potential financial impact. Insurance allows for the transfer of risk and provides needed funds to rebound and rebuild—hopefully to higher standards—from extreme events. Insurers can also incentivize resiliency efforts and better risk management by linking insurance coverage to risk reduction efforts. For instance, insurers could offer discounts or lower deductibles for improved mitigation and construction practices. Additionally, they could offer higher deductible policy options at more affordable prices to increase the availability of coverage at different price points in the market. Theoretically, bearing part of the risk through deductibles also provides motivation for policyholders to take risk reduction measures. Insurers can also advocate for stronger building codes and smarter land-use practices to reduce their exposure to catastrophic losses. This, in turn, strengthens insurers' ability to provide affordable products. In their outreach and advocacy efforts, insurers can also function as risk educators.

◆ Fostering Disaster-Resistant Construction Through Collaboration

The insurance industry is currently active in several collaborative efforts to reduce catastrophic risk. Through the property (re)insurers funding of the Institute for Business and Home Safety (IBHS), it supports improved construction, maintenance and preparedness practices. The IBHS is a nonprofit, scientific research and communications organization. It conducts building safety and mitigation research to identify the most effective way to create more resilient communities. Its research center in South Carolina is used to test how residential and commercial structures uphold against simulated weather events. Tested weather perils included hailstorms, windstorms, wind-driven rain, wildfires and fires. It also performs field testing in states with high exposure to tornadoes. The data gathered through its scientific research is then used to inform builders, homeowners and businesses on disaster-resistant construction and mitigation practices. It also serves as a basis for IBHS's newly created FORTIFIED national standards for resilient construction.[1]

IBHS FORTIFIED programs provide residential and commercial standards for new and existing structures. The FORTIFIED for Safer Living program focuses on construction, design and landscaping standards for all natural hazards facing the residence. FORTIFIED Commercial programs provide hazard-specific standards for new and existing commercial buildings. The FORTIFIED for Safer Business program is a code-plus new construction pilot program for light commercial buildings. FORTIFIED Home programs focus on residential construction or retrofit standards for a single hazard. The program offers three incremental price and protection designation levels—Bronze, Silver and Gold.

IBHS FORTIFIED Home programs are available nationally. However, Oklahoma and Colorado are receiving special consideration for IBHS' recent rollout of its FORTIFIED Home—High Wind and Hail program. Exposure to severe wind and hail in these states make them particularly well suited for this program. The nation's first FORTIFIED Home—High Wind and Hail home was built in Tulsa this year. Construction was sponsored by the Tulsa Habitat for Humanity in partnership with State Farm and the private-public partnership Tulsa Partners. A second FORTIFIED home is planned in Oklahoma City.[2] FORTIFED Home—High Wind and Hail homes are expected to eliminate property damage from low-level tornadoes. In a state with almost 800 tornadoes last year, this level of resilience can make a big difference in property losses.

The IBHS FORTIFIED Home Hurricane program was initiated in 2010. The program focuses on the performance of retrofits as a system, rather than how each retrofit functions individually. The designation levels provide homeowners with the ability to mitigate to their specific risks and budget. Upgrades for changes in the home's risks must be done in a specific order. This ensures the entire system of risks is retrofitted to the designation level. The IBHS system approach improves and standardizes retrofit performance, reducing losses from hurricanes and other events. This in turn improves insurers' ability to model losses and more accurately assess retrofitting benefits.[3]

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[1] About IBHS - IBHS. (n.d.). Retrieved from https://disastersafety.org/about/.
[2] IBHS, 2016. "FORTIFIED Resilient Home Programs Launched by IBHS at National Tornado Summit."
[3] IBHS. "IBHS FORTIFIED Home Hurricane; Bronze, Silver and Gold: An Incremental, Holistic Approach to Reducing Residential Property Losses in Hurricane-Prone Areas," accessed at http://disastersafety.org/wp-content/uploads/ATC-FORTIFIED_IBHS.pdf.

◆ CREATING COLLABORATIVE FORTIFICATION SYNERGIES ALONG THE EASTERN COAST

Rising coastal storm risks have accelerated resiliency initiatives along the U.S. eastern coast line in recent years. Growing coastal populations and home values combined with more extreme weather events continue to push economic and insured losses higher. Today the most concentrated populations in the U.S. are in counties in coastal areas. Hurricane Sandy illustrated the rising risk to coastal cities, affecting more than a dozen states in 2012. Private insured property losses were reported to have reached more than $18 billion by Verisk Analytics' Property Claim Services (PCS).[4]

These trends illustrate the growing importance of mitigating against catastrophic losses from disasters. Recognizing this, Alabama, Georgia, Mississippi and South Carolina have enacted various regulatory incentive and mitigation expense reduction programs for homeowners meeting FORTIFIED standards. Alabama and Mississippi have enacted legislation requiring admitted insurers in their states to provide FORTIFIED homes premium discounts in specified coastal counties at higher risk for hurricanes. The Mississippi Windstorm Underwriting Association (MWUA) and the Georgia Underwriting Association (GUA) provide property insurance wind premium discounts to FORTIFIED homes. The MWUA and the GUA function as the market-of-last-resort in their respective state. The North Carolina Rate Bureau submitted a rate filing to the state's insurance department to provide mitigation incentives to FORTIFIED homes in 18 coastal counties.[5]

The Strengthen Alabama Homes (SAH) program provides grants directly to homeowners to reduce expenses for wind-resistant mitigation. The Alabama Legislature created this fortification program to address the cost of loss mitigation. The SAH program also provides educational outreach and partners with various organizations. Beginning this year, the SAH program will be funded by the Alabama Department of Insurance (DOI), the Alabama Insurance Underwriting Association (AIUA), and the Federal Home Loan Bank (FHLB) of Atlanta. It will receive up to $15 million in grant funds to be administered by the Alabama DOI over three years.[6]

The South Carolina Department of Insurance administers SC Safe Home, a grant program similar to the SAH program. The SC Safe Home is funded by a portion of the state tax revenue collected on insurance policies. It provides up to $5,000 in grants to individuals for retrofitting against hurricane and wind damage. Florida has a public-private mitigation partnership called REBUILD Northwest Florida (REBUILD). REBUILD coordinates recovery initiatives and residential mitigation. It partners with the Federal Emergency Management Agency (FEMA), the Florida Division of Emergency Management (DEM), various counties, disaster management partnerships and the Home Builders Association of West Florida. However, most of its funding is in the form of FEMA grants.[8]

Many coastal states and communities have also incorporated the FORTIFIED Home standards into their building code requirements in response to recent hurricanes. In April of this year, Connecticut Governor Dannel P. Malloy issued an executive order instructing the Insurance Department to collaborate with the Department of Administrative Services (DAS), Department of Energy and Environmental Protection (DEEP) and the Office of the State Building Inspector to strengthen building codes. Governor Malloy cited changing climate conditions as the impetus to revising the State Building Code standards to increase resiliency of new and renovated infrastructure. He emphasized many resiliency measures are affordable and reduce claim costs by a much greater factor than the initial resiliency investment. Such measures include sealing seams in roof decks to guard against water infiltration if shingles blow off; stronger tie-downs of roofs to building structures; and impact-resistant glass in high-wind areas.[9]

◆ PARTNERING FOR RESILIENCY SOLUTIONS

Improving the resiliency of our nation will require resources beyond those provided by just insurers. Of the $28.6 billion in economic losses North America experienced in 2015, $17.3 billion (about 60%) was covered by insurers.[10] The remaining 40% of economic losses is referred to as the protection gap. The protection gap must be absorbed by non-insurance sources. This includes individuals, businesses and government programs—which ultimately come down to taxpayers. Given the enormity of assets not protected by insurance, it is clear resiliency cannot be achieved by insurers alone.

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[4] Insurance Information Institute, 2016. "New York Hurricane Insurance: Fact File," accessed at www.iii.org/article/new-york-hurricane-insurance-fact-file.

[5] IBHS. "Regulatory Framework for FORTIFIED Insurance Incentives," accessed at http://disastersafety.org/wp-content/uploads/FORTIFIED-Home-Incentives_IBHS.pdf.

[6] 2016. "Report of the Coastal Insurance Workgroup," accessed at www.aldoi.gov/PDF/News/CIWGfinalreport1-20-2016.pdf.

[7] Slade, D., 2015. "State Grant Program That Helps Pay for Residential Roof Replacements Will Reopen Soon.

[8] About REBUILD Northwest Florida – REBUILD Northwest Florida, n.d. Accessed at www.rebuildnwf.org/about/.

[9] Ct.gov., 2016. "Gov. Malloy Signs Order Strengthening State Building Code to Limit Storm Damage as a Result of Climate Change."

[10] Swiss Re Sigma, 2016. "Natural Catastrophes and Man-Made Disasters in 2015: Asia Suffers Substantial Losses," accessed at http://media.swissre.com/documents/sigma1_2016_en.pdf.

Public entities, private entities and individuals must work in partnership to address our nation's vulnerability to catastrophic losses. Insurance payouts provide funding for better rebuilding after a disaster strikes. But this is a reactive post-disaster approach to a problem best dealt with pre-disaster proactive approaches. Proactively investing in resilient infrastructure before a disaster strikes reduces catastrophe risk exposure at the source. Reducing risk at the source reduces insurers' tail risk by reducing the severity of potential catastrophic losses. This increases the insurability of at-risk assets and, thus, the availability of insurance. It also reduces non-insured economic losses, lessening the potential financial impact to society.

The concept of public-private partnerships is beginning to take hold in the U.S. As illustrated in the preceding section, many of these partnerships have centered on efforts to improve infrastructure. Insurance industry leaders have participated in private and public forums and roundtables aimed at creating collaborative catastrophe loss reduction solutions. The Aug. 3, 2016 White House Forum on Smart Finance for Disaster Resilience focused, in part, on mitigation incentive programs being used in communities. Following their involvement in this forum, the American Insurance Association (AIA), IBHS, National Association of Mutual Insurance Companies (NAMIC), Property Casualty Insurers Association of America (PCI) and Reinsurance Association of America (RAA) released a joint statement affirming the property and casualty industry's commitment to physical loss mitigation and disaster resilience.[11] As part of this commitment, they agreed to further the discussion on how public-private partnerships can incentivize risk reduction efforts.

The PCI and IBHS fulfill this commitment in part as partners in the National Oceanic and Atmospheric Administration (NOAA) National Weather-Ready Nation Ambassador initiative. The initiative was created by NOAA to foster community resilience to extreme weather events. As ambassadors, they support the initiative's goal to create strong partnerships with academia, non-profits and responders in the public and private sectors. The insurance industry also partners with such groups as the National Fire Protection Association (NFPA). The NFPA creates codes and standards aimed at reducing fire-risk for use and adoption by communities. It also educates homeowners through its public education programs.[12] Wildfire Partners is another public-private partnership the insurance industry supports. Program partners from the insurance industry include the IBHS, Rocky Mountain Insurance Information Association (RMIIA), the PCI, Allstate, State Farm, Farmers, and USAA.

◆ A CLOSER LOOK AT THE WILDFIRE PARTNERS PUBLIC-PRIVATE PARTNERSHIP

Wildfire Partners is a voluntary homeowner's certification program to help Boulder County, CO homeowners mitigate against wildfire risk. The program began in 2014 as the county strategized on how to change its approach to reducing escalating wildfire losses. Increased building in the Wildland-Urban Interface (WUI), combined with drier conditions had been driving up fire-related losses. After the Fourmile Canyon Fire in 2010, it became clear WUI fire disasters could not be prevented by suppression and traditional mitigation programs. Homeowners would need to actively create and maintain home ignition zones (HIZ) with low home ignition potential.[13]

The Wildfire Partners program achieves this by shifting the responsibility for reducing wildfire risk to homeowners. The program provides a comprehensive, on-site assessment of the home ignition zone; a customized report detailing actions the homeowner should take; and a follow-up visit to ensure the homeowner is prepared for future wildfires. Additionally, phone advisors are available to answer questions and help homeowners through the process.[14]

According to Jim Webster, coordinator for the Wildfire Partners Program, homeowners spend an average of 57 hours and $1,864 mitigating their homes. Wildfire Partners provides an average of an additional $680 per home in financial assistance. As such, technical assistance efforts must help the homeowner work smarter and understand the complexity of mitigating wildfire risks to a home. "The key is to provide value, not just requirements, to the homeowners going through the mitigation process," he said. "We don't just drop off a brochure and expect the homeowner to read it and take action without being led through the process."

Homeowners get a certification letter, Wildfire Partners Certificate and Wildfire Partners Yard Sign upon passing their follow-up inspection verifying they have met the program's mitigation standards. Participants remain in the program for as long as they live in their home. Certificates, letters and yard signs (with a sticker just like your license plate) are up-

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[11] PCI, 2016. "Property-Casualty Insurance Industry Joint Statement Public and Private Resilience Initiatives."

[12] National Fire Protection Association. "NFPA Overview," accessed at www.nfpa.org/overview.

[13] National Association of Insurance Commissioners, 2016. "NAIC Global Warming and Climate Change (C) Working Group," Aug. 27 meeting minutes.

[14] Wildfire Partners. "Helping Boulder County Homeowners Prepare for Wildfire," accessed at www.wildfirepartners.org.

dated upon request from the homeowner. Allstate, USAA and State Farm have agreements to automatically recognize the certificate, while State Farm recognizes it for renewal rights. Although the program is voluntary, Webster said homeowners sometimes will be referred by their insurer during the initial purchase or renewal process. This illustrates the certificate's use to verify insurability.

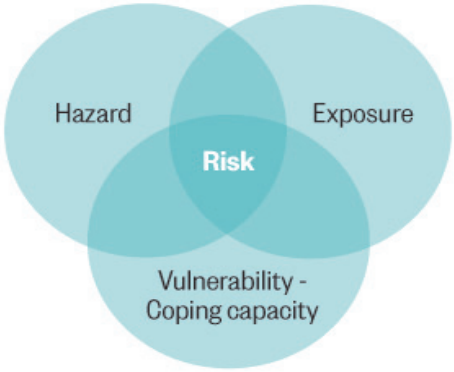
The Wildfire Partners program could be used as a model for public-private partnerships and expanded into other wildfire prone communities. Its funding comes from local, state and federal sources. Specifically, it receives funding from Boulder County, a Hazard Mitigation Grant Program award from FEMA, and a Wildfire Risk Reduction Grant (WRRG) from the Colorado Department of Natural Resources (DNR). Webster credits the program's initial success to its approach in motivating collaborative decision making and participation. "It was the approach that made the most difference," he said. "Insurers and local fire officials were approached in the beginning as partners with the aim of solving the problem jointly."

Wildfire Partners is a consortium of more than 35 partners from a wide breadth of public and private sectors, which helps spread the word through multiple channels. It was designed to bridge the potential disconnect between stakeholders, bringing them together to achieve mitigation in a collaborative approach. In doing so, it eliminates the inefficiencies of having two separate processes. Alone, the private sector efforts are limited to prescriptive standards and face restrictions in funding and local knowledge. Public sector efforts face challenges with negative trust perceptions and the ability to provide in-depth mitigation services to thousands of homes. A public-private partnership overcomes many of these challenges and allows for the creation of programs providing high quality services helping homeowners effectively reduce risk.[15]

◆ ADVANCING ACTUARIAL APPROACHES THROUGH COLLABORATION

To remain solvent, insurers must be able to sufficiently price, pool and spread risk. However, changing climate characteristics bring increasing variability into modeled losses. This makes it harder for insurers to identify their tail risk—that is, the risk severe catastrophic losses could impair solvency. Insurers need to look at the *frequency* of severe weather to accurately assess if there is an increasing incidence and risk of weather extremes. However, most climate data is published as averages over time, which is not useful to insurer actuaries.

FIGURE 1: THE RELATION OF RISKS TO ITS COMPONENT FACTORS



Source: Figure 7 of the Determining the Impact of Climate Change on Insurance Risk and the Global Community, Phase I: Key Climate Indicators Report.

Acknowledging this gap in data, the four North American actuarial associations—the Casualty Actuarial Society (CAS), the Canadian Institute of Actuaries (CIA), the Society of Actuaries (SOA), and the American Academy of Actuaries (AAA)—began collaborating on research aimed at assessing climate change and its potential risk implications to the insurance industry. As part of this effort, the group released a research paper entitled, *Determining the Impact of Climate Change on Insurance Risk and the Global Community*. The paper laid the framework for the development of the soon-to-be-released Actuaries Climate Index (ACI) and the Actuaries Climate Risk Index (ACRI). The ACI measures changes in climate extremes, while the ACRI relates those climate extremes to economic and human losses. The paper also proposed a factor for vulnerability be added to the factors of hazard and exposure of assets in quantifying risk (Figure 1). The climate index could then be incorporated into the estimate for hazard, introducing climate variability into the quantification of risk.[16]

The ACI measures the frequency of extreme climate events over time for the U.S., Canada and 12 sub-regions in North America. It is a composite of six underlying indices for high and low temperature, heavy precipitation, lengthy drought, strong winds and coastal sea level. The index values are

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[15] National Association of Insurance Commissioners, 2016. "NAIC Global Warming and Climate Change (C) Working Group," Aug. 27 meeting minutes.

[16] Guerard, Y., 2013. "A New Actuaries Climate Risk Index," The Actuary, accessed at www.theactuary.com/features/2013/02/a-new-actuaries-climate-risk-index/.
County Homeowners Prepare for Wildfire," accessed at www.wildfirepartners.org.

based on the actual number of days above or below the 90th percentile in a month using a base reference period of 1961-1990. The drought index is based on the highest number of consecutive dry days in a year. The precipitation index is based on the maximum total precipitation over any five-day period. The wind index uses NOAA data and focuses on how many days in the month were at or exceeded the 90th percentile. The coastal sea level index relies on monthly sea level data from tidal gauge stations.

There are many uses for the ACI. It can be used to monitor long-term climate trends. Since the ACI is based on objective information and data, it can also be used to compare against other sources of climate trends, including a company's internal trending sources. Additionally, the ACI's components can be used individually to measure change in extreme climate by only those components of interest. This flexibility allows the indices for individual components to be incorporated into mathematical equations or benchmarks independent of the ACI. The index could also be extended to include other elements, such as socioeconomic information, to make it more comprehensive and tailor it more directly to the needs of the actuaries or other stakeholders using the index.

The ACI is expected to be released before the end of this year. It will be hosted on public websites where users can find a variety of graphics showing changes in the ACI, its components and their regional distribution. There are many ways the data elements can be combined into a composite ACI and the web interface provides the user with certain calculation options. However, the default will be a simple mean of the components. Once released, the websites can be found at *www.actuariesclimateindex.org* or *www.indiceclimatiqueactuaries.org*.

The ACRI is intended to aid the insurance industry in modeling for potential climate change related losses. It is designed to assess population and property at risk of climate change related losses and quantify this risk. This requires understanding the relationships between climatic and socioeconomic factors. Under the expanded definition, risk represents hazard, exposure and vulnerability. The ACRI incorporates all three of these variables by adding population and economic exposure of property to the ACI. The ACRI uses historical correlations by peril of economic losses, mortality and morbidity to monthly regional ACI data. For instance, the correlation between mortality and morbidity versus heat or crop and wildfire damages versus consecutive dry days. The regional ACRIs are given a weight based on region population and then averaged to calculate the total, US and Canada ACRI. The ACRI will also be publicly available and is anticipated to be released by mid-2017.

The ACRI could be used as an actuarial pricing tool since it better reflects changes in long-term trends than trended historical data. It can also provide a more accurate picture of risk and loss exposure for risk management and underwriting practices. Additionally, like the ACI, components of the ACRI could be deconstructed, modified or substituted for independent components reflecting individual user preferences. Future research in this area is likely to fine tune the ACRI calculation to be more useful to the insurance industry by using insurance losses instead of economic losses or incorporating insurance claims.

◆ CONCLUSION

Recognition of our nation's increasing vulnerability to natural disasters is propelling initiatives for greater resilience. The diversity of the geography in the U.S. exposes us to numerous weather-related perils, including hurricanes, wildfires, droughts, flooding, and snowstorms. Increasing coastal populations, property values and extreme climate conditions will likely continue to heighten catastrophe losses. Additionally, the world has become increasingly interdependent and the risks involved affect many stakeholders. As such, it will take collaborative and forward looking initiatives to develop innovative solutions to address the complexity of the problem. The insurance industry plays an important role in reducing our nation's natural hazard risk. In recent years, the insurance industry has fulfilled this role by partnering with various public and private entities to strengthen building codes, fortify residential and commercial properties and improve loss modeling tools.

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Anne Obersteadt is a researcher with the NAIC Center for Insurance Policy and Research. Since 2000, she has been at the NAIC performing financial, statistical and research analysis on all insurance sectors. In her current role, she has authored numrtoud articles for the CIPR Newsletter, a CIPR Study on the State of the Life Insurance Industry, organized forums on insurance related issues, and provided support for NAIC working groups. Before joining CIPR, she worked in other NAIC Departments where she published statistical reports, provided insurance guidance and statistical data for external parties, analyzed insurer financial filings for solvency issues, and authored commentaries on the financial performance of the life and property and casualty insurance sectors. Prior to the NAIC, she worked as a commercial loan officer for U.S. Bank. Ms. Obersteadt has a bachelor's degree in business administration and an MBA in finance.

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