

Union of
Concerned
Scientists

Overwhelming Risk

Rethinking Flood Insurance in a World of Rising Seas

STORMS STRIKE THE U.S. COAST each year, sometimes with devastating force. Both the risks and the costs of flooding and wind damage to seaside coastal communities are growing. Rising population and increasing development along scenic coastlines are putting more people and more valuable property in harm's way. Accelerating sea level rise, by putting higher water levels in the path of coastal storms, is increasing the threat, especially along the

East and Gulf Coasts of the United States, which have seen higher and faster rates of sea level rise than the global average. Global warming has also resulted in stronger and more destructive hurricanes in the North Atlantic, and more frequent heavy rain events. Together, those socioeconomic and climate-related trends are driving increased property damage and loss along our coasts—costs that are projected only to grow in a warming world.

In the face of increasingly unmanageable risks, many private insurers have left the coastal insurance market. The National Flood Insurance Program (NFIP) is now practically the sole provider of flood insurance for home owners and small businesses nationwide. To ensure widespread coverage against flooding and storm damages at an affordable cost, the federal and state governments have established taxpayer-backed subsidized insurance options. However, the artificially low insurance rates that result, and other subsidies, have instead allowed—indeed, reinforced—risky patterns of land development. They have also created perverse incentives for repetitive insurance claims and an unsustainable level of financial exposure for all taxpayers, who ultimately help

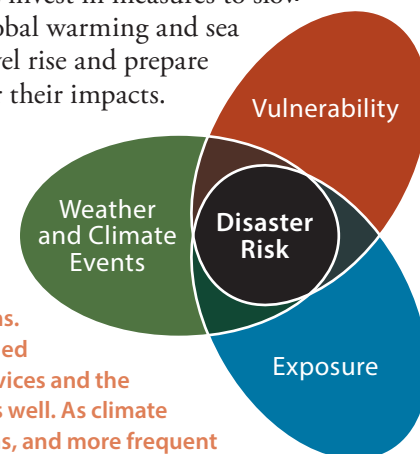
pay for insurance claims and disaster relief in the event of a major storm.

With sea levels projected to rise globally between at least eight inches and more than six and a half feet above 1992 levels by the end of this century, and at a substantially faster rate than at present along densely populated parts of the East Coast,

our risk of physical and financial harm is rising rapidly, too. We urgently need to reform our insurance system so that it can help us manage these risks effectively, even as we invest in measures to slow global warming and sea level rise and prepare for their impacts.

FIGURE 1. Recipe for Disaster

Densely populated and highly developed U.S. coastlines mean that the nation is greatly exposed to potential damages from coastal storms. The vulnerability of many communities, determined by such factors as people's access to essential services and the resilience of critical infrastructure, is often high as well. As climate change drives rising sea levels, intensifying storms, and more frequent heavy rain events, the ingredients for future disasters are disconcertingly aligned. Fortunately, we can make choices to help lower our physical and financial risks by investing in measures to increase coastal resilience and cut the carbon emissions that fuel accelerating sea level rise. Based on a figure from IPCC 2012.



The National Flood Insurance Program (NFIP): A Rapidly Increasing Taxpayer Liability

The federally-backed NFIP was designed to help deliver affordable, widely available insurance against flood damage (both coastal and inland)—coverage that was increasingly hard to find in the private market—and to reduce the need for taxpayer-funded disaster relief. As of 2012, NFIP provided over 5.6 million insurance policies to home owners and small businesses nationwide, with approximately \$1.25 trillion in insured assets. Florida, Texas, Louisiana, California, and New Jersey are the top five states by number of NFIP policies, and together account for approximately three-quarters of all coastal NFIP policies.

Several key factors challenge NFIP's success—indeed its survival—as a solvent risk management system: low rates of insurance purchase, artificially low premiums that do not reflect true risk, loopholes in the program that allow some properties to keep their rates low through grandfathering provisions, repeated payouts for losses to the same high-risk properties, and the failure to account for future sea level rise in flood risk maps that help determine insurance rates.

The Federal Emergency Management Agency (FEMA): Mapping Coastal Flood Risks

FEMA plays a critical role in assessing a coastal community's risk of flooding by developing flood insurance rate maps (FIRMs), based on modeling the dynamics of coastal waves and storm surges. Because of lack of funding from Congress, FEMA's flood risk maps are being updated in some parts of the country for the first time since the 1980s. The new draft maps can help inform, even enforce in some cases, better decision

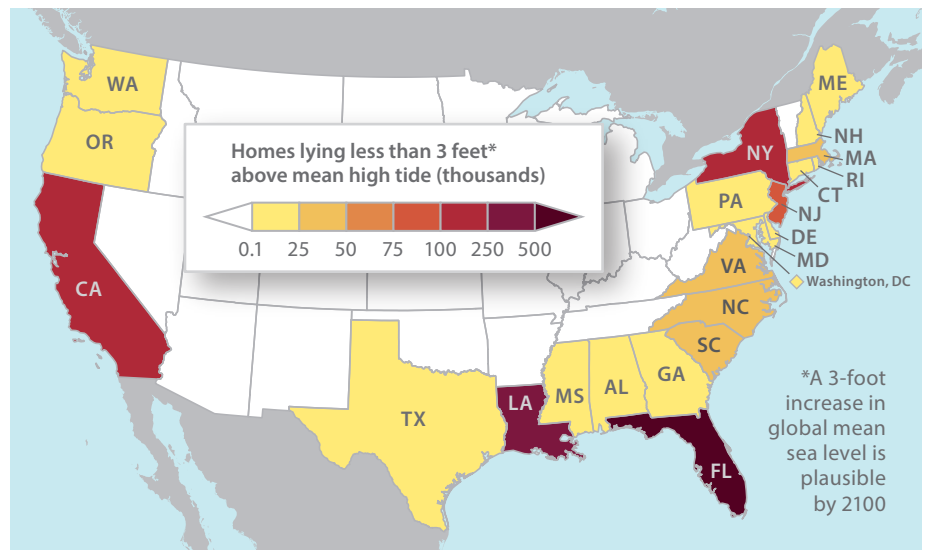


FIGURE 2. Growing Risks to Homes from Sea Level Rise and Storms

In recent years, properties in low-lying coastal states have experienced increasing damage from storms and severe flooding. Almost three million people—and their homes—reside within three feet of mean sea level. With rising seas projected to exceed the three-foot mark within this century, a great many homes are clearly at risk.

Map based on data from Strauss et al. 2012.

making. But they do not fully reflect the risks of sea level rise in the coming decades and are thus an inadequate basis for long-lived decisions, such as where to build homes. For example, in the near term, impacts of sea level rise such as increased coastal erosion, steepening of the coastal profile, and potential for waves and storm surge to reach further inland due to elevated sea levels can have a significant effect on flooding and inundation risks to coastal communities. Congress has not given FEMA the mandate to account for long-term erosion when it updates its flood maps, nor does FEMA currently account for ongoing sea-level rise, which could, in the coming decades, cause low-lying coastal areas to become regularly flooded or permanently inundated.

For coastal communities with growing populations, more valuable properties, and rising seas, the risks and the costs of flooding are growing.

State-Subsidized Insurance against Windstorm Damage

Wind-related coastal storm damage from hurricanes, nor'easters, and other ferocious storms is increasingly being covered through so-called "residual property insurance markets" that provide state-subsidized special-purpose insurance. Nationwide, the number of residual policies more than tripled from roughly 1 million to more than 3 million between 1990 and 2011. Simultaneously, because of increasing high-value development along the coast, the value of insurance coverage offered by these plans disproportionately increased more than 1,500 percent—that is, 16 times, growing from \$55 billion in 1990 to \$885 billion in 2011. Florida's insurance and reinsurance programs had a combined total exposure of more than \$2 trillion, far exceeding that of all other programs combined. Such rapid growth in insurance coverage is creating an unsustainable exposure to risk for state budgets and taxpayers, and might even become a burden for federal taxpayers if, for example, the state of Florida is unable to cover the costs of a major storm.

Insurance Reform: Recommendations to Reduce Our Risks

The risk of damages along the U.S. coast is high and growing. As a society, we are currently failing to manage that risk effectively. A serious approach to risk reduction and management would involve:

- NFIP ensuring that insurance premiums reflect true risks to coastal properties, while offering a voucher or rebate program to help low-income property owners.
- FEMA using the latest scientific projections of sea level rise and storm surge in maps used to determine ongoing and future flood risks and set insurance rates.
- FEMA discouraging continued building and rebuilding in high-risk areas by reducing payouts for repetitive losses and increasing rates in the event of repeated losses.

The Burden Is Unequal

Low-income communities are often among the hardest-hit by major storms. Hurricane Katrina, which hit in 2005, had a devastating impact on low-income communities and communities of color. Pictured here, a New Orleans resident searches for salvageable items in her home located in the Lower Ninth Ward.

Seven years later, the impacts of Hurricane Sandy were also especially severe on low-income communities in New York and New Jersey. The storm did extensive damage to public housing in New York City, and many low-income renters have been left without affordable housing options.



Although current insurance rates in most coastal areas do not adequately reflect true risk, a rapid rise in insurance premiums could hit low-income or fixed-income property owners hardest. Instituting a program of vouchers or rebates can help these property owners cope with higher rates, while ensuring that they have adequate coverage against natural disasters.

- NFIP phasing out grandfathering provisions that unfairly subsidize some property owners at the expense of others and perpetuate risky development in coastal floodplains.
- Federal and state governments making options for home buy-outs and relocation more widely available in some of the highest-risk areas prone to repeated flood damage.
- State insurance regulators requiring that flood maps be shared with home buyers and small-business owners prior to the purchase of property to increase buyers' awareness of flood risks.
- The federal government, under NFIP, creating enforceable mandates so that all property owners in high-risk areas have adequate insurance; the mandates should also encourage all property owners with any risk of flooding to purchase insurance.
- Federal and state authorities ensuring that taxpayer-subsidized programs include incentives to relocate away from the coast and to invest in property upgrades that help adapt to rising seas.
- The federal government, in coordination with state governments, setting guidelines to ensure that rebuilding dollars are used for climate-resilient reconstruction and other measures to reduce exposure to future flooding events.

The National Flood Insurance Program, now practically the sole provider of flood insurance for home owners and small businesses, is more than \$20 billion in debt to the U.S. Treasury.

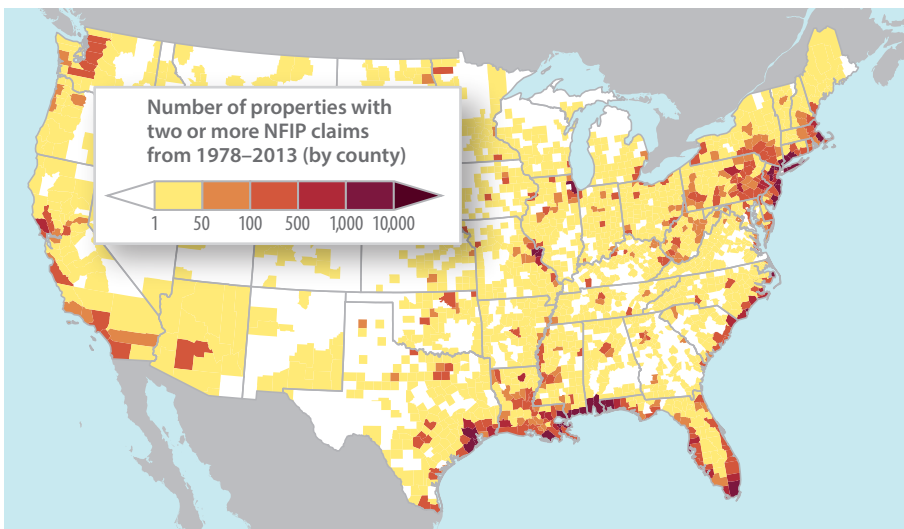


FIGURE 3. Repetitive-Loss Properties by U.S. County

Insurance claims on properties that are repeatedly damaged by flooding, or “repetitive losses,” are of particular concern to the National Flood Insurance Program (NFIP). NFIP has paid out almost \$9 billion in claims to repetitive-loss properties, which amounts to about a quarter of all NFIP payments since 1978. Repetitive-loss properties, shown here, account for just 1.3 percent of all policies but are responsible for fully 25 percent of all NFIP claim payments since 1978. The darker colors show counties particularly prone to repetitive losses. Map based on data from FEMA as of May 2013.

Conclusion

Against a backdrop of growing coastal population and development, climate change is raising the risk of costly damages to coastal properties by contributing to more intense hurricanes, accelerating sea level rise, and bigger, more damaging storm surge. The National Flood Insurance Program is already more than \$20 billion in the red because of its flawed structure of rates, risks, and incentives, and is becoming more financially compromised due to an uptick in extreme weather events such as Hurricane Sandy. State-subsidized wind insurance programs are similarly a growing source of financial exposure for taxpayers.

Important steps are under way to reform the system (e.g., through the 2012 Biggert-Waters Flood Insurance Reform Act; see the box). But we need to go further, especially in incorporating sea level rise projections into our coastal planning, development, and rebuilding decisions. Paramount to the long-term future of our coasts, we must invest in measures to reduce our carbon emissions to help slow global warming and sea level rise—and thereby also manage our risks.

Of the more than half a million households seeking federal aid after Hurricane Sandy, 43 percent reported annual incomes of less than \$30,000.

The Biggert-Waters Flood Insurance Reform Act of 2012

The Biggert-Waters Flood Insurance Reform Act of 2012 takes some substantial steps to address shortcomings in the National Flood Insurance Program (NFIP). Starting in 2013, NFIP insurance rates are set to increase quite significantly in several coastal areas to bring them in line with true flood risks. The act will also attempt to phase out subsidies for severe repetitive-loss properties, grandfathered properties, and second homes. One of the most important provisions of the act is the establishment of a Technical Mapping Advisory Council that will provide recommendations to

the Federal Emergency Management Agency about how to consider the impacts of sea level rise and coastal development in flood insurance rate maps.

The insurance rate increases triggered by this act are understandably unpopular. Many coastal communities are unhappy with the changes; there are even attempts in Congress to delay or rescind the increases. However, given years of mismanagement of our coastal risks and the prospect of increasing risks from sea level rise, the changes in the act are overdue and are badly needed.



Some New Jersey home owners are opting to elevate their homes in the wake of Hurricane Sandy and the implementation of the Biggert-Waters Flood Insurance Reform Act of 2012 (see box above). Elevation not only better protects homes from storm surge and subsequent flooding, but can also help reduce insurance premiums for home owners.

To download a fully referenced version of the full report with acknowledgments, visit the UCS website at www.ucsusa.org/floodinsurance.

Union of Concerned Scientists

The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet's most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future.

This report was authored by Rachel Cleetus.

National Headquarters

Two Brattle Square
Cambridge, MA 02138-3780
Phone: (617) 547-5552
Fax: (617) 864-9405

Washington, DC, Office

1825 K St. NW, Ste. 800
Washington, DC 20006-1232
Phone: (202) 223-6133
Fax: (202) 223-6162

West Coast Office

2397 Shattuck Ave., Ste. 203
Berkeley, CA 94704-1567
Phone: (510) 843-1872
Fax: (510) 843-3785

Midwest Office

One N. LaSalle St., Ste. 1904
Chicago, IL 60602-4064
Phone: (312) 578-1750
Fax: (312) 578-1751

© August 2013
Union of Concerned Scientists

Page 1 photo: © Master Sgt.
Mark C. Olsen/U.S. Air Force

Printed on
recycled
paper using
vegetable-
based inks