

Study finds the insurance industry paying increasing attention to climate change

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The insurance industry, the world's largest business with \$4.6 trillion in revenues, is making larger efforts to manage climate change-related risks, according to a new study published today in the journal *Science*.

"Weather- and climate-related insurance losses today average \$50 billion a year. These losses have more than doubled each decade since the 1980s, adjusted for inflation," says the study's author Evan Mills, a scientist in Lawrence Berkeley National Laboratory (Berkeley Lab)'s Environmental Energy Technologies Division. "Insurers have become quite adept at quantifying and managing the risks of climate change, and using their market presence to drive broader societal efforts at mitigation and adaptation."

Hurricane Sandy is only the most recent U.S. example of the kinds of increasing liabilities posed by severe [weather events](#) in a changing climate.

Managing a portfolio of \$25 trillion in assets, similar in size to mutual funds or pensions globally, the insurance industry has become a significant voice in world policy forums addressing the issue, as well as a market force, investing at least \$23 billion in emissions-reduction technologies, securities, and financing, plus \$5 billion in funds with environmental screens, seeing risks to investments in polluting industries and opportunities in being part of the clean-tech revolution.

Risk and opportunity

"Where there are risks, there are opportunities," writes Mills. Responding to shareholder, regulatory, and market forces, three global initiatives [UN Environment Program Finance Initiative (1995), ClimateWise (2007), and the Kyoto Statement (2009)] have compelled 129 insurance firms from 29 countries to engage in activities including: supporting [climate research](#); developing climate-responsive products and services; raising awareness; reducing in-house greenhouse gas emissions; quantifying and disclosing climate risks; incorporating climate change into investment decisions; and influencing public policy. The ultimate goal of these industry activities is reducing climate-related losses among their customers as well as reducing their own exposure to risk, which is rising in step with the magnitude and frequency of extreme weather-related events.

These insurers, together with reinsurance companies (the insurers of insurance companies), industry associations, brokers, catastrophe-loss modelers, and partners in the research community, have been using sophisticated analytical tools to quantify and diversify their exposure to climate change risk, more accurately price and communicate risk, and get adaptation and loss-prevention efforts up and running.

"Insurers from North America, Asia, and Europe worked with scientists through the three latest Intergovernmental Panel on Climate Change assessments dating back to the mid 1990s to better understand their exposure to climate change risk," says Mills. "They expanded these collaborations into such projects as harmonizing economics-based insurer catastrophe models with climate models."

New insurance products and services

According to the study, 1,148 climate change adaptation and mitigation activities have emerged from 378 entities in 51 countries, representing \$2 trillion (44 percent) of industry revenue. For example, insurers have brought at least 130 products and services to market encouraging the spread of more energy-efficient homes and commercial buildings by paying claims that encourage rebuilding to a higher level of energy efficiency after a loss. At least 65 other insurance industry products address the risks and opportunities of the renewable energy industry.

Pay-as-you-drive insurance policies, now numbering nearly 3 million, offer auto insurance based on number of miles driven rather than a fixed premium. GPS technologies verify driving distances, and policyholders benefit from a more accurate insurance premium. The price signal of lower premiums for miles actually driven could reduce U.S. driving by 8 percent, and oil use by 4 percent, reducing the cost of driving by \$50 to \$60 billion per year because of a lower chance of accidents and reduced traffic congestion.

Another innovative class of insurance products insures financial shortfalls if projects underperform at delivering energy savings or low-emissions power generation. Some insurance products manage the risks of carbon-trading transactions, such as wildfires releasing carbon sequestered in forests. By assuming these risks and engineering the insured programs to minimize their losses, insurance companies pursue a broader policy objective of verifiable, bankable, persistent emissions reductions—all of which reduce the overall risks associated with climate change.

Leading by example is another type of climate change risk mitigation strategy being seen increasingly in the insurance industry. Many insurers have programs to reduce their own [greenhouse gas emissions](#) and purchase offsets, and 26 claim they have reached carbon-neutrality. A creative example is the mangrove restoration by Tokio Marine and

Nichido Insurance Co. taking place in India and southeast Asian countries. Begun in 1999, this project is close to reaching its goal of restoring 8,200 hectares (more than 20,000 acres) of mangrove forests in coastal areas of seven countries. Mangrove reforestation reduces exposure of coasts to storm damage, and helps sequester carbon.

Developing world activities

"In the developing world, poor populations have little access to insurance," says Mills. Decades ago, government and non-profit entities began issuing microinsurance policies that offer modest coverage in health, property, and life insurance for small premiums. Commercial insurers have followed suit, making tens of millions of these policies possible by integrating actuarial and environmental sciences into insurance models. Some of these products incorporate remote sensing and climate-sensitive methods to analyze the risks to crops and livestock.

There remain numerous opportunities to expand the innovation in the insurance industry, Mills believes. Some assert that the industry hasn't done enough. The federal government is the insurer of last resort for floods and crops in the U.S., but these climate risk techniques have not been applied to federal insurance programs. There's also not much research in the field of loss modeling under future climates, or comparative risk assessments of [climate change](#) response options, which could help guide policymakers about how to adapt to changing climate.

Mills' study nonetheless demonstrates that market mechanisms are playing a large and growing role in the [insurance](#) industry's efforts to address the consequences of a [changing climate](#).

More information: "The Greening of Insurance," by E. Mills, *Science*, 2012.

Provided by Lawrence Berkeley National Laboratory

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