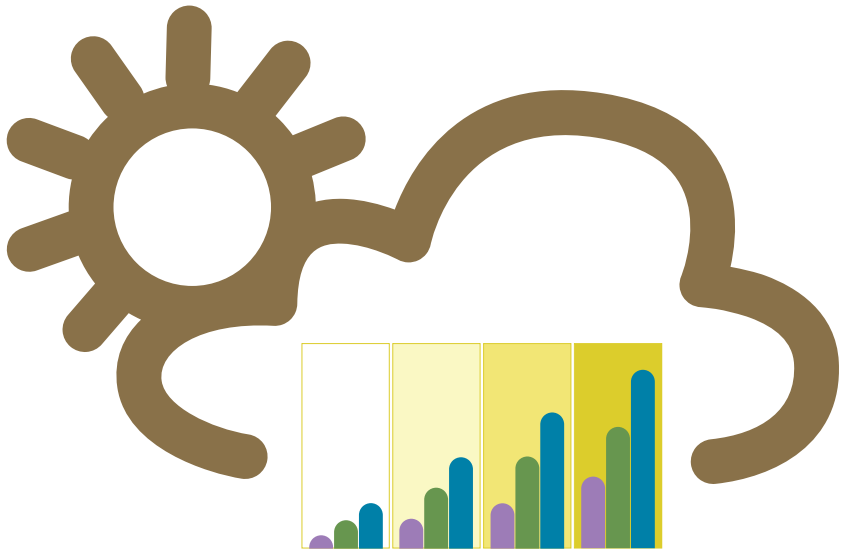
Ceres

Insurer Climate Risk Disclosure Survey Report & Scorecard:

2014 FINDINGS & RECOMMENDATIONS

October 2014 ▪ Ceres Insurance Program



ABOUT CERES

Ceres is a nonprofit organization advocating for sustainability leadership. It mobilizes a powerful network of investors, companies and public interest groups to accelerate and expand the adoption of sustainable business practices and solutions to build a healthy global economy. Ceres also directs the Investor Network on Climate Risk (INCR), a network of over 100 institutional investors with collective assets totaling $13 trillion. For more information, visit www.ceres.org or follow Ceres on Twitter: @CeresNews.

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EXPERT REVIEWERS

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The opinions expressed in this report are those of Ceres and do not necessarily reflect the views of reviewers.

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Foreword

By Mike Kreidler

Washington Insurance Commissioner
Chair, National Association of Insurance Commissioners' (NAIC)
Climate Change and Global Warming Working Group

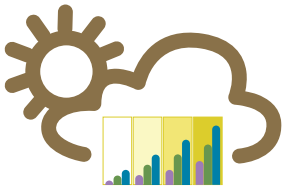
The insurance sector, by necessity, is a conservative and pragmatic industry. Its whole purpose can be summarized in two core goals:

- To serve a key financial need by consumers and businesses for a safety net against risks.
- To make sufficient money in the process, after covering claims, to provide a reasonable return to investors.

As state commissioners who respect the need for a healthy insurance industry that meets these goals, we are encouraged to see the largest response ever to the *Climate Risk Disclosure Survey*, a nearly 80 percent increase in insurer responses compared to 2011. The 330 company responses in this Ceres report represent 87 percent of the total premium value of insurance issued in the United States. We are especially pleased with the leadership practices that key property and casualty companies, including The Hartford, Catlin, Hanover, the XL Group and Swiss Re, are using in assessing and protecting themselves and their clients from climate change risks.

However, much of the insurance industry is still lagging on this important issue, particularly those in the Life and Annuity and Health sectors—and they cannot afford to. If 97 percent of our actuaries concluded there was going to be a decline in public health due to a medically identified epidemic, we would expect the firms we regulate to adjust their forecasts, premiums and policies accordingly. Failing to do so would be imprudent. With climate change, 97 percent of scientists in the field agree that it is a reality and are more focused on the timing and magnitude of changes and related damage we can expect. This industry should be focused less on what is causing climate change and more on how we respond to and mitigate it.

As key regulators of this sector, we strongly encourage insurance industry leaders and investors who own these companies to take this challenge far more seriously. There is no doubt that an early effort to adjust policies, premiums and insurance investments will result in less dramatic impacts later on, thus avoiding and reducing losses that we can already anticipate. The insurance industry, by being responsible and forward-looking, can lead the way to better public and private investments as well as more robust research and policy engagement to identify, quantify and mitigate the key climate risks we all face. As this valuable report points out, the result will be an insurance industry whose markets expand rather than contract in the face of growing climate change risks.



Executive Summary

THE OBJECTIVE

This report summarizes responses from insurance companies to a survey on climate change risks developed by the National Association of Insurance Commissioners (NAIC). In 2013, insurance regulators in California, Connecticut, Minnesota, New York and Washington required insurers writing in excess of $100 million in direct written premiums, and licensed to operate in any of the five states, to disclose their climate-related risks using this survey.

The aim of the survey, and Ceres' analysis of the responses, is to provide regulators, insurers, investors and other stakeholders with substantive information about the risks insurers face from climate change and the steps insurers are taking—or are not taking—to respond to those risks. Because virtually every large insurer operates in at least one of the mandatory climate risk disclosure states, this analysis effectively opens a window into the entire industry. The report distills key findings and industry trends, and includes company specific scores based on disclosed actions taken to manage climate risks. It also offers recommendations for insurers and regulators to improve the insurance sectors' overall management of climate change risks.

CERES' ANALYSIS

The survey generated 330 distinct insurer responses after duplicates were removed, compared to 184 insurer responses in a similar Ceres report issued in 2012.[1] The 330 companies represent about 87 percent of the U.S. insurance market by direct premiums written. Ceres' analysis assesses insurer responses against five core themes that are aligned with the NAIC's Climate Risk Disclosure Survey questions: 1) the governance structures companies have in place to address climate risk; 2) the climate risk management programs companies have instituted across their enterprises; 3) how insurers are using computer modeling to manage their climate risks; 4) how insurers are engaging with stakeholders on the topic of climate risk; and 5) how companies are measuring and reducing greenhouse gas (GHG) emissions. Ceres also ranked companies on the overall quality of their responses to the eight survey questions.

In order to provide standardized, useful comparisons between companies, Ceres assigned a point value to each question and sub-question from the survey.[2] To simplify our report findings, Ceres developed a four-tier rating system. Using a 100-point scale, ***"Leading"*** companies received 75 points or higher, ***"Developing"*** companies received between 50 to 75 points, ***"Beginning"*** companies received between 25 and 50 points, and ***"Minimal"*** companies received less than 25 points. Company specific ratings across all six themes can be found in Appendix A.

1 The full list of survey respondents is located in Appendix C.

2 For a full list of questions and sub-questions see Appendix B.

KEY FINDINGS

In general, most of the companies responding to the survey reported a profound lack of preparedness in addressing climate-related risks and opportunities. Only nine insurers, or three percent of the 330 companies overall, earned a Leading rating. The vast majority of insurers (83 percent) earned Beginning or Minimal ratings. On an encouraging note, the report identified a small subset of strong leading practices by insurers in each of the major themes. Given the strong scientific consensus on climate change, the rest of the industry would be well advised to consider adopting these innovative practices. Other major report findings include:

- Larger insurers showed stronger climate risk management practices than smaller companies.
- Property and Casualty (P&C) insurers demonstrated far more advanced understandings of the risks that climate change poses to their business, and are much further along in developing tools needed to manage climate change risks when compared to the Life & Annuity (L&A) and Health insurance segments.
- Despite increased evidence that extreme heat waves and other climate-related impacts will influence morbidity and mortality trends, L&A and health insurers show widespread indifference to climate risk, both in regard to their core business lines and their investment strategies.
- Barely 10 percent of the insurers overall—38 of 330 companies—have issued public climate risk management statements articulating the company's understanding of climate science and its implications for core underwriting and investment portfolios. Given the insurance sector's key role in addressing societal risks, this near total silence on climate change is deeply troubling and is thwarting constructive public engagement on appropriate responses.

Below are the insurers that earned the top Leading rating for overall performance. All are P&C (re) insurers, with the exception of Prudential, which is a L&A insurer. The Hartford and Prudential are the only US-headquartered insurers to earn Leading ratings.

TOP RATED (RE) INSURERS		
ACE	Munich Re	Swiss Re
Allianz	Prudential	XL Group
The Hartford	Sompo Japan	Zurich Insurance

KEY FINDINGS BY INDUSTRY SEGMENT

Property & Casualty Insurers

P&C insurers are on the veritable 'front line' of climate change risks, and there is compelling evidence that those risks are growing. Rising sea levels and more pronounced extreme weather events will mean increasingly damaging storm surges and flooding. Hurricane Sandy caused an unprecedented 14-foot storm surge, eclipsing the 10-foot record set in 1960,[3] and resulted in more than $68 billion in total losses (over $29 billion in insured losses) and 210 deaths.[4] A tremendous amount of property (both insured and uninsured) is increasingly threatened by sea-level rise. CoreLogic, a global property information and analytics provider, identified more than 6.5 million U.S. homes at risk of storm surge damage, with a total reconstruction value of nearly $1.5 trillion in a July 2014 report.[5]

3 Kevin H. Kelley, "Hurricane Sandy: expected event, unexpected consequences," *Insurance Day*, August 29, 2014: https://www.insuranceday.com/generic_listing/catastrophes/hurricane-sandy-expected-event-unexpected-consequences.htm.

4 Munich Re NatCatSERVICE, *Loss Events Worldwide 1980—2013: 10 costliest events ordered by overall losses:* https://www.munichre.com/site/touch-naturalhazards/get/documents_E-311190580/mr/assetpool.shared/Documents/5_Touch/_NatCatService/Significant-Natural-Catastrophes/2013/10-costliest-events-ordered-by-overall-losses-worldwide.pdf.

5 CoreLogic, "2014 CoreLogic Storm Surge Analysis Identifies More Than 6.5 Million US Homes with Total Reconstruction Value of Nearly 1.5 Trillion Dollars at Risk of Hurricane Storm Surge Damage," July 24, 2014. http://www.corelogic.com/about-us/news/2014-corelogic-storm-surge-analysis.aspx.

Against this backdrop, the P&C segment's reaction has frequently been to limit coverages or entirely withdraw from certain catastrophe-prone markets, especially coastal regions such as Long Island,[6] Virginia,[7] Delaware[8] and Florida. In the long run, these coverage retreats transfer growing risks to public institutions and local populations, and reduce the resiliency of communities, which are less able to finance post-disaster recoveries. Climate change will increase the need for insurers and regulators to promote risk-based pricing based on escalating risks. By doing so, they can ensure critical long-term market participation by the private insurance sector.

Coastal regions are far from the only areas exposed to climate risks. For example, agriculture impacts are being felt all across the United States, as shown by the record $17 billion in crop losses incurred by the Federal Crop Insurance Program (FCIP) in 2012 caused by devastating heat waves and drought.[9] Climate change will make droughts more frequent in some regions, likely resulting in record-breaking crop losses becoming a more frequent occurrence.

Extreme weather is also exacerbating supply chain risks and causing business interruption losses. One such example was the massive 2011 flooding in Thailand, a production hub for many global businesses that caused $15-20 billion in losses, ultimately impacting the profitability of Cisco, Dell, Ford, Honda, HP, Toyota and many other global firms.[10]

Despite these trends that jeopardize core underwriting results, most P&C insurers are paying inadequate attention to climate risks. P&C insurers are still ahead of L&A and health insurance providers, however. Among the report's key findings for P&C companies:

- While the P&C segment has higher overall scores than the Health or L&A segments, only eight of the 193 companies—four percent—earned the Leading rating and 20 percent earned a Developing rating. Put simply, the vast majority of P&C insurers are not addressing climate risks comprehensively.
- Nearly half of P&C insurers have taken positive steps in **Climate Change Modeling & Analytics**, with 26 percent earning a Leading rating and 21 percent earning a Developing rating. In many instances, insurers are using climate-informed catastrophe models to better quantify climate-related risks from more frequent and intense weather catastrophes.
- Only 13 out of 193 P&C insurers—seven percent—earned a Leading rating for their **Climate Risk Governance** practices, with another 47 earning a Developing rating. Insurers with leading practices, including **The Hartford** and **Catlin**, have established standing cross-functional committees that monitor and report to senior management and their boards of directors regarding climate risks and opportunities.
- **Enterprise-Wide Climate Risk Management** evaluates insurer climate risk responses across three aspects of the value chain: products and services, liquidity/capital management and investments. In this theme, 15 of 193 insurers earned Leading ratings (eight percent) and 38 earned Developing ratings (20 percent.) Insurers with leading practices, such as **XL Group**, track climate-related claims as part of their quarterly reporting. **Hanover Insurance** uses a shadow carbon price in evaluating possible investments in carbon intensive heavy industries and utilities.

6 Senator Charles Schumer (D-NY), "Schumer: after Sandy, home insurance companies are increasingly abandoning Long Islanders—even those unaffected by the storm—forcing them into far higher-priced, lower-coverage plan; will call for FEMA to bring serious penalties against companies if they continue to leave market," June 24, 2013. http://www.schumer.senate.gov/Newsroom/record.cfm?id=344160.

7 Skip Stiles and Shannon Hulst, *Homeowners Insurance Changes in Coastal Virginia*, Wetlands Watch, 2013. http://www.floods.org/ace-files/documentlibrary/committees/Insurance/WetlandsWatch_Insurance-study.pdf.

8 M. Patricia Titus, "Insurers abandon coastal market," *Coastal Point*, April 19, 2008. http://bethanybeachnews.com/content/insurers_abandon_coastal_market.

9 "Record-Breaking $17.3 Billion in Crop Losses Last Year; Significant Portion Potentially Avoidable," Natural Resources Defense Council, http://www.nrdc.org/media/2013/130827.asp.

10 Joyce Coffee, "Supply Chains in the Face of a Changing Climate," The Environmental Leader, April 30, 2014. http://www.environmentalleader.com/2014/04/30/supply-chains-in-the-face-of-a-changing-climate/.

- Only five percent of P&C insurers earned a Leading rating on **Stakeholder Engagement**, with an additional seven percent earning a Developing rating. Insurers have multiple tools at their disposal to promote climate mitigation and adaptation. **Swiss Re**, for example, is using a Flood Risk App to educate users on the importance of adapting to climate risks, including increased flood risks.

Life & Annuity Insurers

L&A insurers confront different climate risks than P&C insurers. However, a changing climate will still have major implications for this insurance segment, especially concerning its vast investment portfolios. L&A insurers have trillions of dollars in investments—roughly two-third of the U.S. insurance sector's total cash and invested assets—that may be affected by climate change. If L&A insurers do not manage their investments with this reality in mind, they risk jeopardizing their returns and long-term capacity to meet their liabilities.

L&A insurers also need to conside how global warming will affect human health and mortality, a point made clear by warnings in the 2014 National Climate Assessment[11] of growing air pollution impacts on vulnerable populations, and extreme weather and wildfires.

Despite such concerns, the L&A sector's overall response to climate risks was materially inadequate. Among the key findings in this regard:

- Overall, L&A insurers have taken little or no action to reduce their climate risks. Only one of the 92 L&A companies, **Prudential**, earned a Leading rating, while 79 percent of L&A companies earned the bottom Minimal rating.
- Two companies outlined **Climate Risk Governance** practices for identifying, monitoring and acting on climate risks at the board and senior management levels. **Prudential** is unique in designating environment and sustainability issues as board-level responsibilities, and for creating an Environmental Task Force to monitor climate change related issues, led by the Vice President of Environment and Sustainability.
- Only one L&A insurer earned a Leading rating for **Investment Management**, and another three earned the Developing rating. Insurers with strong practices such as **Boston Mutual** noted that its investment guidelines restrict it from investing a large portion of its portfolio in carbon-heavy industries. **Lincoln National** stated that it screens real estate investments for climate impacts across operational, market, liability, policy and regulatory risks.

Health Insurers

Despite growing concerns about climate related impacts on public health—temperature extremes, decreased air quality, and increased waterborne and vector-borne diseases,[12] among those—survey responses showed that most Health insurers are not preparing. With access to large sets of detailed claims data, health insurers are uniquely positioned to advance climate- and health-related research in partnership with academics or other outside researchers. Among the report's key findings for Health insurers:

- Overall, none of the participating health insurers earned a Leading rating, and only one insurer earned the Developing rating, while 89 percent of the 45 companies earned the bottom rating.

11 US Global Change Research Program, *Third National Climate Assessment*, http://www.globalchange.gov/what-we-do/assessment.

12 Intergovernmental Panel on Climate Change (IPCC) *IPCC Fifth Assessment Report: Climate Change 2014*, "Observed impacts, vulnerabilities, and trends," 26.6.1, 2014, 26-28, http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap26_FGDall.pdf.

- Health insurers fared quite poorly on **Climate Risk Governance**, with no insurers earning a top rating and only one insurer earning a Developing rating. None of the insurers indicated a comprehensive response on climate risk governance or a formalized process for identifying, evaluating and integrating new climate science data that could inform their climate risk assessments.
- Overall, 98 percent of health insurers earned the bottom two ratings for **Enterprise-Wide Climate Risk Management**, and no insurers earned a top rating. Health insurers have an opportunity to work with top experts and outside organizations to better understand and prepare for climate related human health impacts, and to develop improved risk management paradigms to better understand and prepare for climate related human health impacts.
- Health insurers also performed poorly on **Stakeholder Engagement**, including climate risk outreach to policyholders and support for outside climate-related research. The **Kaiser Foundation Group** was a strong exception, with its *KP Research Program on Genes, Environment, and Health (RPGEH)* it launched in 2005 "to conduct research to understand genetic and environmental influences—including weather and climate influences—on disease susceptibility, the course of disease, and response to treatment."

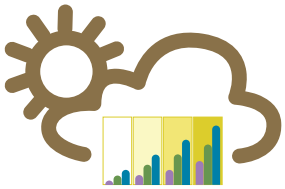
KEY RECOMMENDATIONS FOR ALL U.S. INSURANCE SEGMENTS

- **Develop Climate Risk Oversight at the Board and C-Suite Levels**
  Addressing the long-term risks and opportunities of climate change requires a concerted effort by insurance company leadership, especially at the senior executive and board levels. Insurers' senior-level leadership will need to understand and align company policies with the risks that a warming climate poses.
- **Issue a Comprehensive, Public Corporate Policy on Climate Risk**
  As risk carriers, risk managers and major investors, every insurer should develop and issue a public climate risk management policy for the benefit of their shareholders, policyholders and employees. Such statements need to articulate the company's understanding of climate science, GHG reduction goals, consideration of climate risk in underwriting and investment management, and a commitment to public engagement on climate risk issues.
- **Integrate Climate Risk into ERM Frameworks**
  Insurers must account for climate risks in their ERM and risk assessment methodologies. Incorporating climate change as an emerging risk will help insurers catalyze more effective responses across their enterprises.
- **Improve Climate Change Scenarios and Impact Assessments**
  Apart from catastrophe modeling, which has remained primarily a property/casualty risk management tool, the proliferation of large-scale climate scenario projection software, when combined with insurer underwriting data, will help in developing loss scenarios that directly feed into insurer product offerings and pricing. All insurers should be seeking out such modeling products, and when none are available, work with leading climate and public health experts to develop appropriate tools.
- **Evaluate Climate Risks and Opportunities in Investment Portfolios**
  As major institutional investors, insurers are significantly exposed to climate risks, both related to climatic changes and carbon regulation. Insurers will need to understand and account for these exposures. To remain competitive, companies will also need to understand and invest in new opportunities such as green bonds which provide attractive returns and opportunities for diversification.

- **Engage with Key Stakeholders on Climate Risk**
  Insurers that take action on the recommendations above will find it both prudent and profitable to address climate risk issues with their key stakeholders: policyholders, regulators, investors, brokers/agents, and policymakers. Such efforts include advocating for investments in resilient public infrastructure and climate research, educating policyholders regarding how they can mitigate climate risks in their homes and businesses, and promoting climate-smart insurance products.
- **Provide Comprehensive Climate Risk Disclosure to Regulators**
  In the interests of transparency and supporting evaluations of each specific insurance company's management of its climate risks, insurers should make every effort to provide comprehensive information publicly.
- **Participate in Joint Industry Initiatives on Climate Risk**
  Insurers interested in addressing their climate risks affirmatively have substantial resources available. Insurers can join any number of climate-focused groups, including Ceres' Investor Network on Climate Risk (INCR), the United Nations Environment Program Finance Initiative's Principles for Sustainable Insurance (UNEP FI PSI) and ClimateWise.

KEY RECOMMENDATIONS FOR REGULATORS

- **Mandate Climate Risk Disclosure In All States**
  State insurance regulators in all 50 states should require insurers to file climate risk disclosure survey responses in order to gain a more complete picture of each insurer's climate risk management strategies. Regulators will also need to more consistently engage with insurers on the disclosure process and the substance of the survey results so that the value of the survey is fully realized.
- **Develop an Improved Climate Risk Disclosure Survey**
  While the survey is useful for eliciting insurer responses, there are ways it could be improved in terms of its clarity, comprehensiveness and fairness. For example, the current survey questions do not account for unique climate risks and opportunities facing non-P&C insurers. More nuanced survey questions oriented towards L&A and health insurers would improve their understanding and responses to climate risk.
- **Advocate for Rating Agency Evaluations of Climate Risk Management**
  Regulators should work with ratings agencies such as A.M. Best to develop formal evaluative measures of insurers' climate risk management programs. Standard & Poor's has been evaluating insurers' ERM frameworks for a number of years, yet their evaluative framework does not include specific criteria on how climate risks are integrated into these frameworks. Regulators should engage with industry ratings agencies to address this oversight.
- **Provide Insurers with Comprehensive Climate Science Resources**
  The responses from all three insurance segments showed that many insurers are either uninformed or dismissive of climate risks to their businesses. Creating a database of insurance-relevant and peer-reviewed climate science research would provide a useful, scientific basis for further industry action to address climate risks.



CHAPTER 1

A More Hazardous Operating Environment

In March 2014 the Intergovernmental Panel on Climate Change (IPCC) issued a report, *Climate Change 2014: Impacts, Adaptation and Vulnerability,* which makes clear that climate change effects are "already occurring on all continents and across the oceans" and that the world for the most part is poorly prepared for climate change risks.[13] While there are still opportunities to reduce our collective vulnerability, options for effective action to mitigate these risks will diminish greatly the longer substantive action is delayed.

The IPCC report outlines how climate related risks are becoming increasingly clear, though predicting future impacts remains uncertain. Observed impacts have already affected agriculture, water supplies, and human health along with land and ocean ecosystems.

Closer to home, the U.S. government released its third *National Climate Assessment* in May 2014 showing that global warming-related problems are already affecting ordinary Americans and calling for more action to reduce greenhouse gas (GHG) emissions.[14] This assessment, the most comprehensive review of climate impacts in the U.S. in over a decade, included contributions from 13 federal agencies and more than 300 scientists and experts, as well as input from the business community.

The report notes that average U.S. temperatures have risen 1.5 degrees Fahrenheit since recordkeeping began in 1895,[15] with 80 percent of that warming occurring since 1980. Temperature increases are already impacting Americans in sectors ranging from construction and transportation, to agriculture, forestry and public health. The report warns of increasingly destructive conditions in the future.

Extreme weather and rising sea levels are already damaging crucial infrastructure in many U.S. regions. Climate change is also disrupting natural systems that provide important protective buffers such as flood control and watershed maintenance. More wildfires, decreased air quality, insect-borne diseases and food- and waterborne diseases will take an increasing toll on human health, especially among children, the elderly and other vulnerable populations.

The report notes that many coastal communities, especially along the Atlantic Coast and Gulf of Mexico, have barely begun to protect shorelines from rising seas, while many areas in the Southeast and Southwest are not well prepared for anticipated water shortages.

13 IPCC press release, "IPCC Report: A changing climate creates pervasive risks but opportunities exist for effective responses," March 31, 2014, 1, http://www.ipcc.ch/pdf/ar5/pr_wg2/140330_pr_wgII_spm_en.pdf.

14 US Global Change Research Program, *Third National Climate Assessment*, http://www.globalchange.gov/what-we-do/assessment.

15 Brian Clark Howard, "Federal Climate Change Report Highlights Risks for Americans," May 6, 2014, *National Geographic Daily News*, http://news.nationalgeographic.com/news/2014/05/140506-national-climate-assessment-science/.

1.1 HIGHER PROPERTY LOSSES FROM EXTREME WEATHER

Hurricane Sandy was a powerful reminder of the growing risks from higher sea levels caused by climate change, in combination with intense storm events. The 2012 hurricane slammed into New York City with a storm surge of almost 14 feet.[17] The region's infrastructure and many buildings were incapable of surviving the record flooding, causing significant damage, human upheaval and more than $50 billion in direct damages.[18] Coastal flooding from such events will be a much bigger issue in the future due to higher seas, especially along the U.S. Atlantic coast.

> *"In some high-risk areas, ocean warming and climate change threaten the insurability of catastrophe risk more generally. To avoid market failure, the coupling of risk transfer and risk mitigation becomes essential."*[19]
>
> **Warming of the Oceans and the Implications for the Re(Insurance) Industry, The Geneva Association**

"The prospect of extreme climate change and its potentially devastating economic and social consequences are of great concern to the insurance industry."[16]

The Geneva Association, May 2014

Extreme weather is causing higher losses across wide ranging sectors, including agriculture. In 2012, the Federal Crop Insurance Program (FCIP) paid a record $17.3 billion in crop losses due to a devastating drought and record temperatures.[20] With drought conditions expected to become more common, record-breaking federal insurance payouts will likely continue to increase.

Extreme weather is also exacerbating supply chain risks. The massive flooding in Thailand, a production hub for many global businesses, in 2011 severely impacted global parts suppliers for key sectors, including the automotive and electronic industries. This resulted in an estimated $15-20 billion in losses, impacting the profitability of major multinational corporations around the globe, including Cisco, Dell, Ford, Honda, HP, Toyota and others.[21]

The combined effects of increasing urbanization and climate change are driving higher annual losses (both insured and uninsured) from natural catastrophes, and these trends are expected to translate into future losses of higher magnitudes. Global overall losses from natural catastrophes were $125 billion in 2013, including $31 billion in insured losses. While losses in 2013 were below 2011 and 2012, over the past 30 years (and controlling for inflation), annual losses from natural catastrophes have continued to increase while the insured portion has declined, leaving governments, businesses and individuals to absorb a bigger share. (See Figure 1.1)

16 Insurers that are members of the Geneva Association—an insurance think tank—have gross written premium of more than $2.1 trillion and headquarters in 27 countries.

17 Margaret Orr, "New 'Potential Storm Surge Flooding Map' aims to prevent deaths during hurricane season," *WDSU News*, March 25, 2014, http://www.wdsu.com/news/local-news/new-orleans/new-potential-storm-surge-flooding-map-aims-to-prevent-deaths-during-hurricane-season/25157598#ixzz32wTzN6q7.

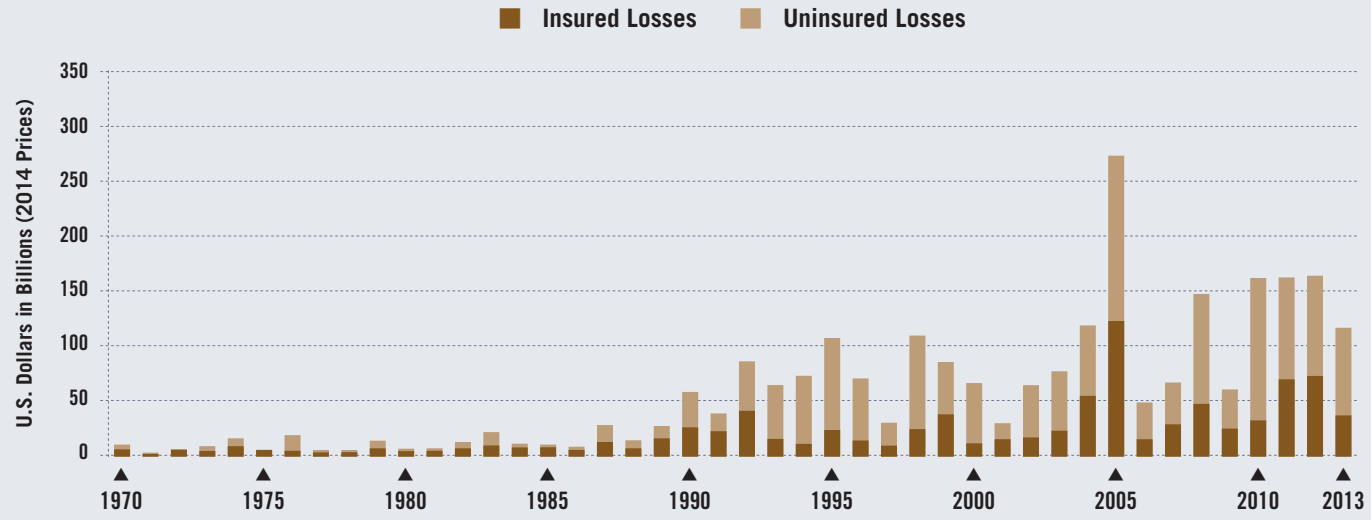
18 David Porter, "Hurricane Sandy Was Second-Costliest in U.S. History, Report Shows," *Huffington Post*, February 12, 2013. http://www.huffingtonpost.com/2013/02/12/hurricane-sandy-second-costliest_n_2669686.html.

19 Geneva Association, *Warming of the Oceans and Implications for the (Re)insurance Industry*, June 2013. Accessed at: https://www.genevaassociation.org/media/616661/ga2013-warming_of_the_oceans.pdf

20 "Record-Breaking $17.3 Billion in Crop Losses Last Year; Significant Portion Potentially Avoidable," Natural Resources Defense Council, http://www.nrdc.org/media/2013/130827.asp.

21 Joyce Coffee, "Supply Chains in the Face of a Changing Climate," The Environmental Leader, April 30, 2014. http://www.environmentalleader.com/2014/04/30/supply-chains-in-the-face-of-a-changing-climate/.

FIGURE 1.1: **INSURED & UNINSURED GLOBAL WEATHER-RELATED LOSSES (1970 - 2013)**



Source: Swiss Re

1.2 GROWING CLIMATE LITIGATION THREAT

The scientific and political focus on climate policy, combined with growing losses being attributed to climate change, are already having a profound impact on climate litigation. In a 2011 UNEP FI report it was concluded that in a single year the world's 3,000 largest public companies were causing an estimated $1.5 trillion of environmental damage directly due to GHG emissions.[22] About 60 percent of these negative impacts were from the electricity, oil and gas, industrial metals and mining, food production, and construction and materials sectors.[23] Many entities, including major emitters of GHGs, along with local, state and federal governments, are already being held legally accountable for the damages.

In 2011, the Supreme Court of Virginia became the first state court to make a determination in a global warming insurance coverage lawsuit.[24] The insurance coverage dispute stemmed from claims filed by the Inupiat Eskimo Village of Kivalina, Alaska against numerous coal-burning utilities, a coal producer and energy companies (including AES Corporation) for damages allegedly related to climate change.[25] The Village of Kivalina asserted that global warming was ruining the community due to melting Arctic sea ice that formerly protected it from winter storms. AES sought a defense in the Kivalina lawsuit under multiple insurance contracts issued by Steadfast Insurance. Steadfast ultimately denied coverage and filed a declaratory judgment action in Virginia state court.

22 United Nations Environment Programme Finance Initiative and Principles for Responsible Investment Association, *Universal Ownership: Why Environmental Externalities Matter to Institutional Investors* (New York: UNEP Finance Initiative, October 2010), 25, http://www.unepfi.org/fileadmin/documents/universal_ownership_full.pdf.

23 Ibid, 27.

24 Hunton & Williams, *Insurance Coverage For Climate Change Cases After AES Corp. v. Steadfast Ins. Co,,* October 2011, http://www.hunton.com/files/News/7d354c22-37b5-413b-a4e8-ae49c456e272/Presentation/NewsAttachment/4a3cfd62-f5f6-459d-a37b-5295b3ab7eb8/insurance_lit_alert_vol_7_2011.pdf.

25 McGuireWoods, *Is Negligence Still Insurable in Virginia? AES Corp. vs. Steadfast Insurance Co,* April 30, 2012., http://www.mcguirewoods.com/Client-Resources/Alerts/2012/4/IsNegligenceStillInsurableinVirginia.aspx.

The Virginia state court found in favor of the insurer, concluding that *"damages caused by climate change did not constitute an "occurrence" under the policyholder's contracts for commercial general liability insurance."*[26] On a petition for rehearing, the Supreme Court of Virginia affirmed in 2012 that an insurer has no duty to defend a utility company against a lawsuit alleging property damage resulting from greenhouse gases (GHGs) emitted in the regular course of business. A win for insurers, the case means that the energy company retains climate liability risks, which could impact its shareholders (including potentially insurers as investors in these companies.)

Another example of climate liability, this time initiated by an insurer, arose in spring 2014 in the form of subrogation against a municipality. Farmers Insurance, a subsidiary of Zurich Financial Group, filed a class action lawsuit against nearly 200 Chicago area communities for failing to adequately prepare their sewers and storm water drains for flooding in April 2013. According to Farmers, wastewater systems were overwhelmed and pushed water back into people's homes, causing significant water damage. The suit alleged that the municipalities should have upgraded stormwater management plans because, *"they knew climate change in the past 40 years has brought rains of greater volume, greater intensity, and greater duration than pre-1970 rainfall history."*[27] Although the suit was withdrawn shortly after it was filed, there are likely to be additional novel claims of climate liability in the future.

"…state and local governments are on the front lines in both responding to immediate weather-related disasters and in preparing for the potential longer-term impacts associated with climate change…"[28]

U.S. Senate Committee on Homeland Security and Governmental Affairs

Given recent decisions in climate change liability cases, legal experts believe that further climate change coverage litigation will emerge in the professional liability/errors and omissions (E&O) insurance and directors and officers (D&O) liability insurance contexts instead of, or in addition to, the commercial general liability (CGL) context.[29] In the case of E&O- and D&O-related lawsuits tied to climate change, Munich Re believes insurance cover would apply as *"…such losses are not based on climate change itself but on the fact that someone has neglected to give the subject sufficient consideration in his or her professional activity."*[30]

Recent legal activities will likely test this prediction. In May 2014, the Center for International Environmental Law, along with Greenpeace and the World Wildlife Fund, sent letters to global insurers inquiring whether their D&O policies would provide coverage to executives against financial damage stemming from climate-related court cases. Some insurance law experts believe it is plausible that an oil and gas executive who knowingly provided misleading information to the public concerning the impacts of the company's GHG emissions would not be protected by a D&O insurance policy.[31]

The bottom line—we can anticipate growing uncertainty, increasing the complexity, and a wide variety of coverage-related legal questions related to climate change confronting insurers, policyholders and other stakeholders. Lawsuits are an inevitable part of the American system for determining whether and how to compensate for damages, and the larger the alleged injuries from climate change, the greater the recovery efforts will be. For insurers, even when policy coverage is denied, the transactional costs, such as legal expenses, associated with these climate change-related coverage disputes are very significant.[32]

26 Ibid.

27 Michael Buck, "Farmers Insurance Climate Change Lawsuit Seen as Test Case by Industry Watchers," *Best's News Service*, May 23, 2014, http://www3.ambest.com/ambv/bestnews/newscontent.aspx?AltSrc=97&refnum=174344

28 The Center for Climate and Security. *Homeland Security and Climate Change: Excerpts from a Senate Hearing*, February 2014, http://climateandsecurity.org/2014/02/13/homeland-security-and-climate-change-excerpts-from-senate-hearing/. Based on written testimony of panelists from the Department of Homeland Security (DHS) and the Government Accountability Office.

29 Bloomberg BNA, *AES v. Steadfast—Still No Coverage for Climate Change Tort Suits in Virginia*, May 17, 2012, http://www.bna.com/aes-v-steadfast-2/.

30 Dr. Ina Ebert and Dr. Guido Funke, "Climate change and liability—Everything you need to know about climate change and liability," Munich Re. http://www.be-sure.co.il/uploaded_files/article_85.pdf

31 Evan Lehmann, "Enviros question if insurers will cover climate risks to executives," *ClimateWire*, May 28, 2014, http://www.eenews.net/climatewire/2014/05/28/stories/1060000250.

32 Christina M. Carroll, J. Randolph Evans, Lindene E. Patton, and Joanne L. Zimlzak, *Climate Change and Insurance*. American Bar Association, 2012.

1.3 CLIMATE RISK AND INSURERS' INVESTMENT PORTFOLIOS

Globally, institutional investors collectively manage about $76 trillion, with insurance companies managing about $25 trillion of the total.[33] Since turning its attention to climate change, the National Association of Insurance Commissioners (NAIC), the primary regulatory body for private insurers in the U.S., has voiced growing concern about the potential impact of climate change on the health of insurer investment portfolios.[34] That concern has escalated as several years of climate disclosure survey results have identified climate-related investment strategy as a key area where the industry most lags behind best practices.[35]

U.S. insurance companies are highly regulated for financial solvency. There are specific regulations, for example, pertaining to diversification of investment assets, restrictions on types of assets and capital requirements that reflect investment and underwriting risk. However, these existing regulations may not adequately reflect emerging risks, especially risks related to climate change. Climate change risks may be characterized as systemic to society as a whole. As a result, in the long term it will not be possible for insurers to avoid these risks simply by diversifying assets or by withholding coverage in certain vulnerable regional markets.

There is significant research suggesting that climate change could degrade the value, credit rating and/or liquidity of large portions of insurers' investment portfolios.[36] For example, extreme weather (such as increased volatility, variability and severity) will exacerbate physical risks to real estate assets, utilities and other municipal infrastructure assets. Climate change will impact water scarcity and water quality risks in the agricultural, food and beverage, chemical and mining sectors, as well as commodities companies.

In addition to the direct impacts of climate change, new carbon-reducing legislation, requirements and social concerns driven by the need to reduce GHG emissions will dramatically impact investments. Additional sources of climate risks include:

- **Carbon asset risks:** Investors are increasingly focused on "stranded asset" risks in the energy sector as identified in analyses by the International Energy Agency, HSBC, Citi, S&P and the Carbon Tracker Initiative, which conclude that at least two-thirds of proven oil, gas and coal reserves must remain unexploited if the world is to avoid potentially catastrophic global warming. If governments strengthen carbon emissions regulations, fossil fuel demand will likely decrease, making it more uneconomical to extract those reserves and potentially stranding those assets.[37]
- **Other "stranded/devalued asset" risks:** Investments in public water utilities, primarily through the purchase of bonds issued by those utilities, also poses financial risks. For example, due to climate and population stresses on water supplies, large water supply infrastructure projects with bond financing might become unable to obtain and sell enough water to pay the debt service on the bonds. Other assets at risk of becoming stranded include real estate assets threatened by rising sea levels, agricultural land no longer arable due to more arid conditions and timber properties vulnerable to wildfires.

33 Climate Policy Initiative (CPI), "The Challenge of Institutional Investment in Renewable Energy," March 2013, 7. http://climatepolicyinitiative.org/wp-content/uploads/2013/03/The-Challenge-of-Institutional-Investment-in-Renewable-Energy.pdf.

34 National Association of Insurance Commissioners, *The Potential Impact of Climate Change on Insurance Regulation*, 2008, http://www.naic.org/documents/cipr_potential_impact_climate_change.pdf.

35 Ceres, *Insurer Climate Risk Disclosure Survey 2012*, 2012, http://www.ceres.org/resources/reports/naic-report/view.

36 Partnership with Cambridge University and IIGCC, UNEP FI, "Climate Change: Implications for Investors and Financial Institutions," June 24, 2014, http://www.unepfi.org/fileadmin/publications/cc/IPCC_AR5__Implications_for_Investors__Briefing__WEB_EN.pdf.

37 Carbon Tracker Initiative, *Unburnable Carbon 2013: Wasted capital and stranded assets*, http://www.carbontracker.org/site/wastedcapital.

- **Reputational risk:** Reputational risk may impact companies in which insurers hold debt or equity. Insurers' investment portfolios may also become a focus for consumers/policyholders, especially given mounting pressure by grassroots campaigns on institutional investors to assess their exposure and divest in fossil fuel-related companies.[38]

Climate change also presents significant positive opportunities for forward-thinking investors. Clean energy investments offer insurers an opportunity to diversify their portfolios, while also countering many of the risks listed above. The emerging green bonds market is an especially attractive investment opportunity for insurers. Investing in environmentally beneficial green bonds offers insurers several benefits, including stable, risk-adjusted returns that fit within existing investment criteria; positive impact on the transition to a clean energy economy and other environmental benefits; and a leadership role in financial market solutions to urgent climate issues.[39]

"If instruments and opportunities exist that provide market returns as well as tangible measurable environmental impacts, then I think [green bonds are] a great investment opportunity."

Cecilia Reyes, group chief investment officer at Zurich, speaking at the UN Investor Summit on Climate Risk in January 2014

1.4 CLIMATE RISK DISCLOSURE: WHAT REGULATORS AND INVESTORS NEED TO KNOW

In sum, climate change poses wide-ranging risks to the operating performance and financial stability of the insurance sector. The degree to which an insurance company is managing these risks ultimately needs to be incorporated into the analyses of rating agencies, such as A.M. Best, for the benefit of investors, policyholders and other stakeholders. At present, A. M. Best uses many quantitative metrics in its insurance company ratings analysis, and also emphasizes the importance of qualitative ratings.[40] For example, below are selected factors related to insurer operating performance and business profile that A.M. Best considers when evaluating companies qualitatively. How an insurer addresses its current and future climate change risks are directly relevant to each of these factors.

38 IMPAX Asset Management, "Beyond Fossil Fuels: The Investment Case for Fossil Fuel Divestment," http://350nyc.files.wordpress.com/2013/08/impax-investment-case-for-fossil-fuel-divestment-us-final-1.pdf.

39 "Zurich Makes a Significant Commitment to Green Bonds," Interview of Cecilia Reyes, CIO. http://www.zurich.com/2013/en/annual-review/how-we-do-it/commitment-to-green-bonds.html.

40 Aon Benfield Analytics, *Update from A.M. Best's 2014 Review & Preview Conference*, March 2014, http://thoughtleadership.aonbenfield.com/Documents/20140326_ab_analytics_ambest_reviewandpreview_conference.

A.M. BEST QUALITATIVE METRICS FOR INSURER RATING ANALYSIS & CLIMATE CHANGE THREATS	
Operating Performance & Business Profile Factors	**Climate Change Threats**
Stability of underwriting & investment results	Significantly increases future uncertainty and unpredictability of both underwriting and investment risks; physical damages and economic impacts may become more highly correlated.
Underwriting skills & adequacy of rates	Emerging risks and opportunities require strengthened underwriting and challenge rate adequacy. Key markets, especially coastal areas, may become less insurable, thereby increasing market competition and downward rate pressure.
Loss reserve development patterns	Adverse loss development related to climate litigation, especially in D&O liability and E&O liability, may force significant reserve strengthening.
Predictive analytics / catastrophe modeling	Insurers must augment existing CAT models to include forward looking loss scenarios based on the latest climate science and encompassing a wide range of perils, e.g., sea-level rise, storm surge, wind, intense precipitation, heat etc.
Spread of risk (geography, line, distribution)	Insurers that have high concentrations of insured property in a given location/region, e.g., coastal, or product line, e.g., D&O liability for oil & gas sectors, will be highly exposed to large losses and/or market uninsurability.
Business reputation / public image	Reputational risk from non-renewal of policies, broad marketplace withdrawal, and denial of coverage. Reputational risk related to GHG producing companies in which insurers hold debt or equity (failure to adequately consider and address ESG risks is a growing concern for many companies.)

In conclusion, and of key importance to regulators and investors, insurance companies that lead in developing business strategies that holistically address escalating climate risks will be significantly better able to manage wide-ranging and increasing threats from a warming world.

CHAPTER 2

Overall Scoring Results

2.1 REPORT OBJECTIVE

The goal of Ceres' analysis of the Climate Risk Disclosure Survey responses is to provide insurers, regulators, investors and other stakeholders with substantive information about the risks and opportunities insurers face from climate change and the steps insurers are taking in response to those risks. While all insurer survey responses are publicly available,[41] Ceres believes that stakeholders benefit from an analysis that distills industry trends and company specific findings from the large volume of survey data, and provides recommendations for insurers and regulators to more effectively manage climate risks. An additional goal of this report is to provide concrete examples of leading company climate risk management practices and the business case for doing so.

2.2 SCORING METHODOLOGY

Our report and insurer scorecard is based on 330 Climate Risk Disclosure Survey responses[42] submitted by insurers doing business in California, Connecticut, Minnesota, New York, and Washington.[43] The eight-question Survey was first adopted by the NAIC in 2010, and has since expanded in both the number of states requiring disclosure and its reporting thresholds. For the 2012 reporting year, which this report covers, insurance companies with direct written premiums over $100 million were required to fill out the survey and submit their responses in August 2013.[44]

TABLE 2.1: EVOLUTION OF INSURER CLIMATE RISK DISCLOSURE SURVEY & CERES REPORT

Reporting Year	Participating States	Reporting Threshold*	# of Insurer Respondents	Ceres Report Release Date	Ceres Survey Report Methodology
2010	CA, NJ, NY, OR, PA, WA	>$500m Voluntary reporting	88	Sept. 2011	• Qualitative assessment • Insurers not scored
2011	CA, NY, WA	>$300m Mandatory reporting	184	Mar. 2013	• Quantitative scoring • Individual company scores not publicly released
2012	CA, CT, MN, NY, WA	>$100m Mandatory reporting	330	Oct. 2014	• Quantitative scoring and performance rankings • Individual company ranks publicly released

* All reporting thresholds are based on annual insurer direct premiums written.

41 Survey responses are available for download at: https://interactive.web.insurance.ca.gov/apex/f?p=201:1:15903647584628::::::.

42 Due to a large volume of duplicate responses from subsidiaries within insurance groups, the total number of filings was 1064; https://interactive.web.insurance.ca.gov/apex/f?p=201:1:0::NO.

43 See Appendix B for the "Climate Risk Survey Guidance for Reporting Year 2012" document for all questions and sub-questions for the 2014 Survey.

44 The reporting year 2011 Climate Risk Disclosure Survey was required by the states of California, New York, and Washington for companies that reported Nationwide Direct Written Premiums in excess of $300 million. Thus, this report includes a broader range of companies, with 184 individual filings for the 2011 Survey compared to 330 in 2012, offering a more comprehensive view of the range of actions insurers are taking in response to climate risk.

Given the significantly higher number of insurers reporting in 2012, the improved survey format,[45] and the greatly improved accessibility of the information (which is now available on the California Insurance Department website) Ceres revised and simplified its scoring methodology from the approach used in previous years.

In order to provide a standardized comparison between companies, Ceres assigned a point value to each question and sub-question of the survey.[46] The points assigned to each question were weighted based on its relative importance to a company's capacity to manage climate risks. For example, enterprise-wide climate risk management (Survey questions three, four and five) is more material to an insurance company's management of climate risks than is a company's internal greenhouse gas management policy (Survey question one), so point values were weighted accordingly. Weightings also differed between Property & Casualty and Life & Annuity/Health insurers since some of the survey questions were not directly relevant to L&A/Health insurers.

Insurance company results are reported according to four performance bands, or ratings, providing a tool for companies to assess their performance relative to their peers and to learn from the climate-related initiatives that others are adopting. If a company performs better than its peers with regard to a specific theme, it does not necessarily mean it has fully implemented leading practices. However, these scores highlight climate risk leaders in the insurance industry, as well as those companies that have more room to improve. The complete list of insurer ratings can be found in Appendix A. The report also includes many examples of industry-leading practices.

When evaluating survey responses, Ceres looked for **examples of concrete actions** implemented by insurers with respect to each of the survey questions and sub-questions. Companies also earned points based on the overall quality of their survey responses in terms of whether all eight questions were answered completely and comprehensively. Ultimately, all scores were determined based on companies' performance **as disclosed in their survey responses**, and thus, Ceres' analysis is inherently dependent on the quality of disclosure.[47]

The Scoring Framework Overview (Table 2.2) presents the survey questions as well as the thematic organization of our scoring approach.

45 The 2011 and 2012 Surveys, when distributed to insurers required to respond, included a document entitled "Climate Risk Survey Guidance", that was designed to offer more specific guidance to insurers in responding to the Survey questions. This document included "questions to consider" that expand on each of the eight primary questions in order to draw out more specificity from company responses, and Ceres has used those sub-questions as guidelines with which to assess insurers.

46 For a full list of questions and sub-questions see Appendix B

47 This report and the associated scorecards exclusively reflect information provided by insurers through the *Climate Risk Disclosure Survey* issued by the NAIC. For an assessment of corporate sustainability performance based on a broad range of public disclosures, please refer to *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability* accessible at http://www.ceres.org/gainingground.

TABLE 2.2: SCORING FRAMEWORK OVERVIEW	
Survey Question #	**Question Text**
Theme 1:	**Climate Governance**
2	Does the company have a climate change policy with respect to risk management and investment management?
Theme 2:	**Enterprise-Wide Climate Risk Management**
3	Describe your company's process for identifying climate change-related risks and assessing the degree that they could affect your business, including financial implications.
4	Summarize the current or anticipated risks that climate change poses to your company. Explain the ways that these risks could affect your business. Include identification of the geographical areas affected by these risks.
5	Has the company considered the impact of climate change on its investment portfolio? Has it altered its investment strategy in response to these considerations? If so, please summarize steps you have taken.
Theme 3:	**Climate Change Modeling & Analytics**
8	Describe actions the company is taking to manage the risks climate change poses to your business including, in general terms, the use of computer modeling.
Theme 4:	**Stakeholder Engagement**
6	Summarize steps the company has taken to encourage policyholders to reduce the losses caused by climate change-influenced events.
7	Discuss steps, if any, the company has taken to engage key constituencies on the topic of climate change.
Theme 5:	**Internal Greenhouse Gas Management**
1	Does the company have a plan to assess, reduce or mitigate its emissions in its operations or organizations?
Theme 6:	**Quality of Climate Risk Disclosure & Reporting**
N/A	The company answered all eight questions completely and comprehensively.

As shown in the table above, Ceres has re-ordered the survey questions and grouped them based on their relative importance in effective climate risk management by insurers. In this regard, **corporate governance** is of great importance in managing climate risk, since senior management and boards of directors set companies' priorities and policies, and can effectively drive climate risk-related initiatives across the organization. **Enterprise-wide climate risk management** characterizes whether insurers are addressing climate risk across both sides of their balance sheets—underwriting/insurance risk, and investment risk. The third theme is **climate change modeling and analytics**, which assesses disclosed use of catastrophe modeling and other digital risk management tools that allow for quantification of risk and stress testing of insurer solvency under various possible climate scenarios. The **stakeholder engagement** theme assesses insurers' efforts to encourage policyholders to reduce climate risks, as well as

insurers' support of research and public education efforts. Lastly, while **internal greenhouse gas (GHG) management** is important, insurers face much greater climate risks related to their underwriting/pricing and investment portfolios. The last theme is **climate risk disclosure and reporting**.

Rated Results

This report uses a four-tier approach for rating insurers' responses to survey questions. The ratings are arranged in a hierarchy as follows:

Top Quartile Rated Insurers = Leading Practices

Second Quartile Rated Insurers = Developing Practices

Third Quartile Rated Insurers = Beginning Practices

Fourth Quartile Rated Insurers = Minimal Information

CLIMATE RISK MANAGEMENT RATINGS HIERARCHY

Minimal	Beginning	Developing	Leading
The insurer provided only a limited amount of detail, omitted answers to survey questions, or survey responses indicated a disregard for the risks climate change presents to the company's lines of business.	Survey responses indicate a basic understanding of climate change, but a lack of a comprehensive strategy to address the myriad risks and opportunities.	Survey responses indicate a solid understanding of climate change and the company has started to develop and implement comprehensive strategies in selected functions.	Survey responses indicate a comprehensive and deep understanding of climate change risks and opportunities and the company has implemented relevant strategies, monitors and measures progress, and has developed accountable climate risk governance at both senior management and board levels.

Insurers were assigned to one of four ratings based on their score.

In order to make more granular comparisons, this rating approach was applied across each of the six themes identified above. For example, a company that was rated Leading in "Climate Change Modeling & Analytics" may not have earned a Leading rating in another category. This detailed analysis allows for the identification of strong practices in particular business areas, as well as those in need of improvement.

Report Structure

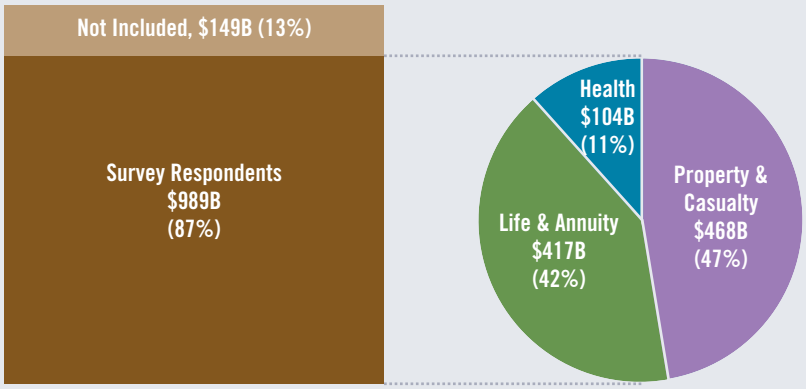
Chapter 3, focusing on the Property & Casualty (P&C) insurer responses, is structured according to the themes listed in Table 2.2 Scoring Framework Overview (page 20), and offers a comprehensive analysis of the P&C insurers' responses. Chapters 4 and 5, evaluating survey responses of the life and annuity (L&A) and health insurance segments, are less comprehensive than the P&C section, for two reasons. The primary reason is that the Climate Risk Disclosure Survey is notably oriented toward P&C insurers, and thus it was not methodologically appropriate to place too much emphasis on non-P&C insurers' responses to a partially inapplicable survey.[48] Furthermore, the L&A and health insurers generally scored poorly on the survey, and thus there were far fewer leading practice examples to draw upon compared to the P&C segment. Chapter 6 offers specific recommendations for insurers and regulators for improving their respective responses to climate risks in the future.

48 See Chapter 6, Recommendations, for more detail on the P&C orientation of the survey.

2.3 PROFILE OF INSURERS IN THE SURVEY

With the addition of Connecticut and Minnesota mandating climate risk disclosure, as well as the expanded reporting threshold across all five reporting states, this year's survey report covers **87 percent of the U.S. insurance market** (based on 2012 direct premiums written), as shown in Figure 2.1 below.[49]

FIGURE 2.1: PERCENT OF INDUSTRY SUBMITTING 2013 CLIMATE RISK DISCLOSURE SURVEYS BY 2012 DIRECT PREMIUMS WRITTEN

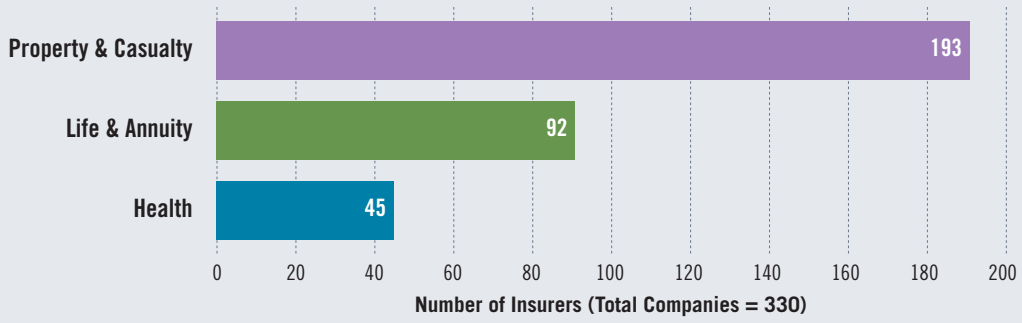


Sources: US Treasury, Annual Report on the Insurance Industry, June 2013, AM Best and NAIC data.

Market Segment

As part of the Climate Risk Disclosure Survey, insurers are required to self-report their market segment.[50] Based on this information, out of the 330 company responses, well over half (193 companies) of the insurers were property & casualty (P&C), nearly one-third (92 companies) were life and annuities (L&A), and about one-tenth (45 companies) were health insurers.

FIGURE 2.2: TYPE OF INSURER RESPONDING TO CLIMATE RISK DISCLOSURE SURVEY



49 In the absence of insurer-reported direct premiums written data in the Climate Risk Disclosure Survey, Ceres derived figures based on multiple sources of data: US Treasury, Annual Report on the Insurance Industry, June 2013, as well as A.M. Best and National Association of Insurance Commissioners (NAIC) figures.

50 While the 2011 Survey report included a fourth "Multiline" segment category, for the 2012 report, Ceres has determined that the key variable that generally determines a company's perception of climate risk is whether the company underwrites property or not. Thus, this report has aggregated those group insurers who indicated that they are P&C, but also underwrite another line of business, be it Health, or Life & Annuity, into the P&C segment.

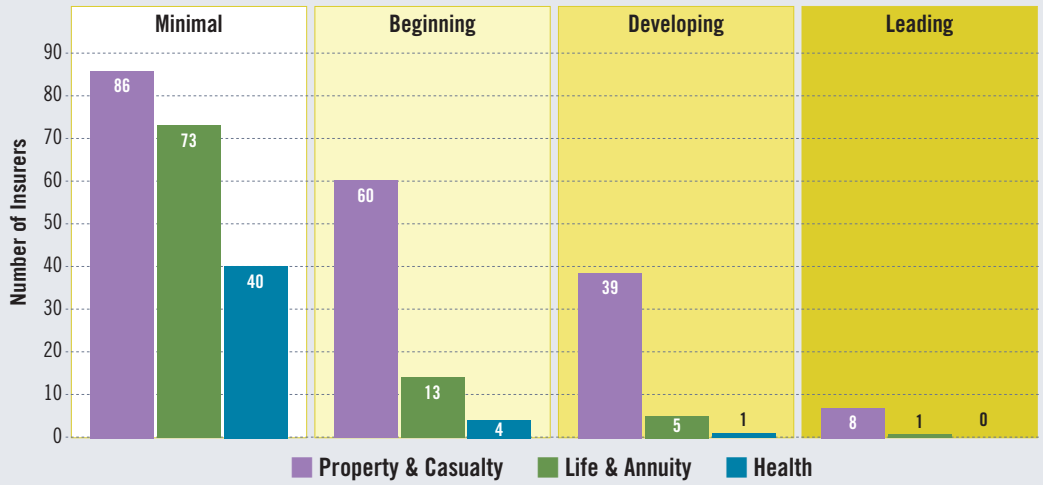
Company Size

Companies were categorized by size based on their 2012 direct premiums written (DPW): **Large –** $5 billion and above; **Medium –** $1 billion to $5 billion; **Small –** $300 million to $1 billion; and **Very Small –** $100 million to $300 million. The Large group comprised 15 percent of the 330 responding companies; the Medium group was 24 percent; Small companies comprised 30 percent: and the Very Small group made up 31 percent.[51]

2.4 OVERALL INSURER PERFORMANCE

Figure 2.3 depicts the spread of scores, grouped by ratings category, across all metrics. Overall, nine insurers (including two based in the U.S.), or 3 percent of the total, earned a Leading rating, while 45 insurers earned the Developing rating. The vast majority of insurers (276 insurers) earned only enough points for the Beginning or Minimal ratings.

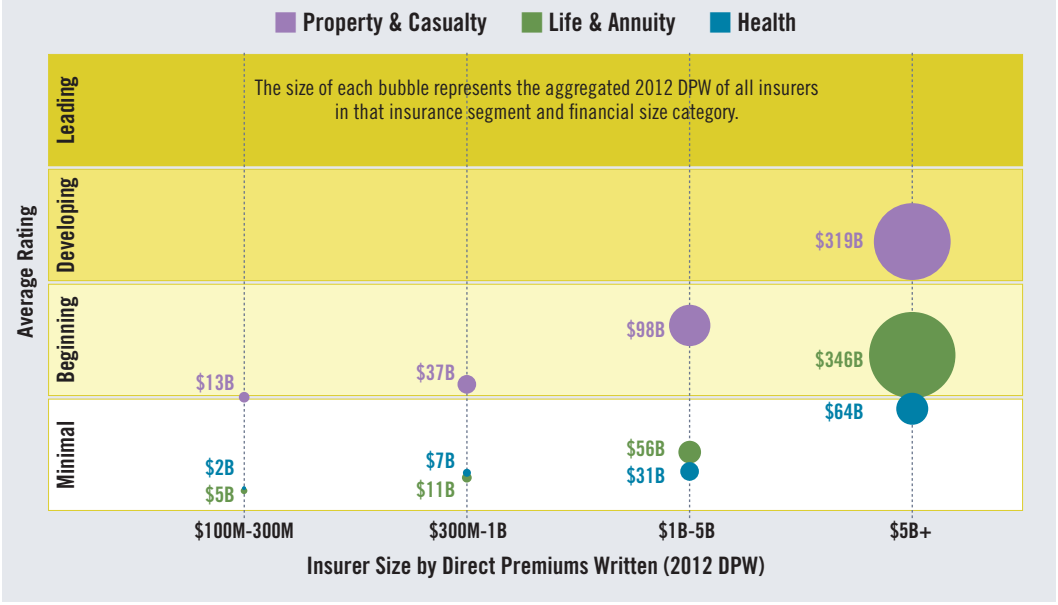
FIGURE 2.3: DISTRIBUTION OF SCORES BY RATING



51 The change in the reporting threshold to $100 million in direct premiums written has expanded the 2012 sample notably, and increased the share of smaller, primarily regional insurers compared to last year. This means that many insurers are reporting for the first time, which might explain some of the poor scores.

Figure 2.4 shows a clear correlation between insurer size and survey performance, with large insurers across all three segments posting significantly higher average scores than their smaller counterparts. In this chart, the size of the bubble reflects the total direct premiums written by all insurers within that particular company size grouping.

FIGURE 2.4: AVERAGE SCORES BY INSURER SEGMENT & SIZE



The Influence of Size and Market Segment

The stronger performance of large insurers can be attributed to a range of likely factors, including access to more resources to fund risk management programs, and greater capacity for engagement with external stakeholders and the public on climate risk topics. Generally, larger insurers are exposed to a greater range of risks since they write policies on a broader geographical scale; as a result, they are positioned to observe trends more easily than smaller regional insurers.

Additionally, P&C insurers are clearly pulling away from their L&A and health counterparts in terms of survey performance. The property-related impacts of climate change have long been a focus of research, and the P&C segment is generally aware of these findings.

However, L&A and health insurers are not immune from climate change impacts. More frequent and stronger heat waves, droughts, floods and severe weather events resulting from a changed climate can increase both morbidity and mortality trends. Extensive property damage from extreme weather events also has an impact on state and local governments and their budgets, both in the near and longer-term, possibly impacting bond-ratings. This, along with declining real estate values, could be detrimental to life insurers' investment portfolios.

Year-Over-Year Comparisons

In March 2013, Ceres released the *Insurer Climate Risk Disclosure Survey Report: 2012 Findings & Recommendations* based on a survey of 184 unique insurance company disclosure filings for the 2011 reporting year as compared to 330 unique insurer responses for this report. Although these two reports share the same name, methodologically they are very different, and therefore Ceres is limited in making year-over-year comparisons. Chapter 3.7 describes the only direct comparison made in this report—the number of insurers with public climate risk management statements.

Overall Scoring Results

Highlighted below are the nine insurers that earned the top Leading rating based on Ceres' analysis of the information in each insurers' 2014 Survey.

TOP RATED (RE) INSURERS		
ACE	Munich Re	Swiss Re
Allianz	Prudential	XL Group
The Hartford	Sompo Japan	Zurich Insurance

This list of companies includes two reinsurers (Munich Re and Swiss Re); six P&C insurers (ACE, Allianz, The Hartford, Sompo Japan, XL Group, and Zurich Insurance) and one life insurer (Prudential Insurance.)

CHAPTER 3

Property & Casualty Findings

P&C insurers are on the veritable 'front line' of climate change risks, and there is compelling evidence that those risks are growing. Rising sea levels and more pronounced extreme weather events will mean increasingly damaging storm surges and flooding. Hurricane Sandy caused an unprecedented 14-foot storm surge, eclipsing the 10-foot record set in 1960,[52] resulting in more than $68 billion in total losses (over $29 billion in insured losses) and 210 deaths.[53] CoreLogic, a global property information and analytics provider, identified more than 6.5 million U.S. homes at risk of storm surge damage, with a total reconstruction value of nearly $1.5 trillion in a July 2014 report.[54]

Against this backdrop, the P&C segment's reaction has frequently been to limit coverages or entirely withdraw from certain catastrophe-prone markets, especially coastal regions such as Long Island,[55] Virginia,[56] Delaware[57] and Florida. In the long run, these coverage retreats transfer growing risks to public institutions and local populations, and reduce the resiliency of communities, which may struggle to pay the costs of post disaster recovery. Climate change will increase the need for insurers and regulators to promote risk-based pricing based on escalating dangers. By doing so, they can ensure future market participation by the private insurance sector.

Overall Results

While the P&C segment has higher average scores than the other two insurance segments, there is substantial room for improvement. Only eight of the 193 companies—four percent—earned the Leading rating, followed by 20 percent with the Developing rating and 76 percent with the bottom two ratings. Despite this sector's distinct vulnerability to climate-related physical impacts as well as climate-related litigation, the vast majority of P&C insurers are not addressing climate risks in a comprehensive manner. (See Figure 3.1)

52 Kevin H. Kelley, "Hurricane Sandy: expected event, unexpected consequences," *Insurance Day*, August 29, 2014: https://www.insuranceday.com/generic_listing/catastrophes/hurricane-sandy-expected-event-unexpected-consequences.htm.

53 Munich Re NatCatSERVICE, *Loss Events Worldwide 1980—2013: 10 costliest events ordered by overall losses:* https://www.munichre.com/site/touch-naturalhazards/get/documents_E-311190580/mr/assetpool.shared/Documents/5_Touch/_NatCatService/Significant-Natural-Catastrophes/2013/10-costliest-events-ordered-by-overall-losses-worldwide.pdf.

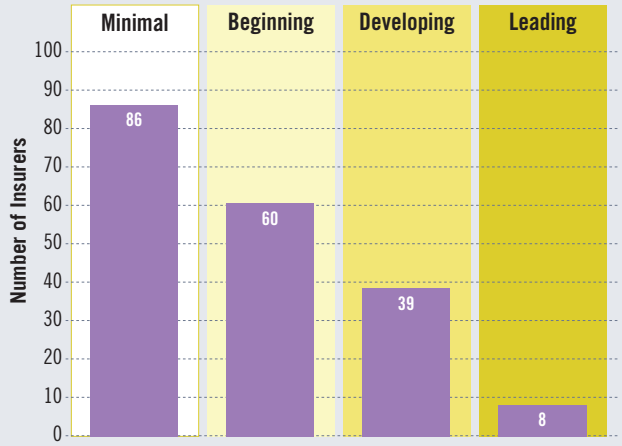
54 CoreLogic, "2014 CoreLogic Storm Surge Analysis Identifies More Than 6.5 Million US Homes with Total Reconstruction Value of Nearly 1.5 Trillion Dollars at Risk of Hurricane Storm Surge Damage," July 24, 2014. http://www.corelogic.com/about-us/news/2014-corelogic-storm-surge-analysis.aspx.

55 Senator Charles Schumer (D-NY), "Schumer: after Sandy, home insurance companies are increasingly abandoning Long Islanders—even those unaffected by the storm—forcing them into far higher-priced, lower-coverage plan; will call for FEMA to bring serious penalties against companies if they continue to leave market," June 24, 2013. http://www.schumer.senate.gov/Newsroom/record.cfm?id=344160.

56 Skip Stiles and Shannon Hulst, "Homeowners Insurance Changes in Coastal Virginia", *Wetlands Watch*, 2013. http://www.floods.org/ace-files/documentlibrary/committees/Insurance/WetlandsWatch_Insurance-study.pdf.

57 M. Patricia Titus, "Insurers abandon coastal market," *Coastal Point*, April 19, 2008. http://bethanybeachnews.com/content/insurers_abandon_coastal_market.

FIGURE 3.1: PROPERTY & CASUALTY INSURERS OVERALL RATINGS



Leading Insurers:

- ACE
- Allianz
- The Hartford Fire & Casualty
- Munich Re
- Sompo Japan
- Swiss Re
- XL Group
- Zurich

Total Companies = 193

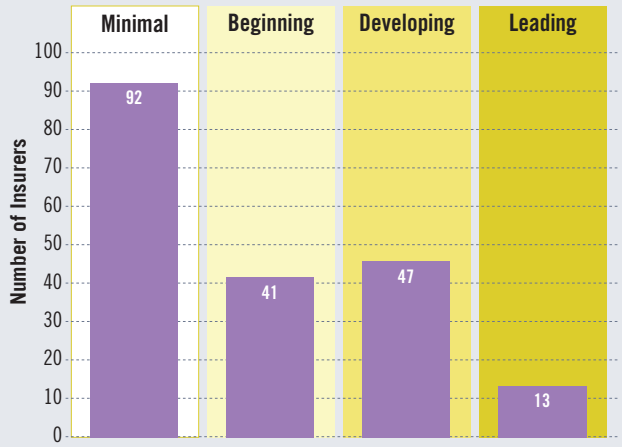
3.1 CLIMATE RISK GOVERNANCE

The Climate Risk Governance theme investigates the extent to which climate risk is being addressed at the top levels of the organization. Companies were scored on the following four Survey questions:

- Is climate risk addressed at the executive level?
- Is climate change explicitly considered in the company's Enterprise Risk Management (ERM) framework?
- Does the board of directors have a role in managing the firm's climate risk?
- Has the company issued a public climate change policy statement?

The following results focus on the first three governance questions. The fourth question is addressed later in the chapter.

FIGURE 3.2: PROPERTY & CASUALTY INSURERS CLIMATE RISK GOVERNANCE BY RATING



Leading Insurers:

- ACE Ltd. Group
- Allianz
- Allstate
- Auto Club Enterprises
- Catlin
- General Security Indemnity
- Grinnell Mutual
- Hartford Fire & Casualty
- Ironshore Indemnity
- Munich Re
- NYCM Insurance
- Pennsylvania National Mutual
- Westfield Insurance

Total Companies = 193

Only 13 of 193 P&C insurers—seven percent—earned a Leading rating for their climate risk governance performance. Twenty-four percent—47 of 193 companies—earned a Developing rating. A strong majority, about 69 percent, do not report having significant senior level leadership responsible for managing climate risks in a systematic way.

The Importance of Comprehensive Climate Risk Governance

Those insurers with strong, top-level leadership will be most able to address climate risk in a comprehensive and substantive manner. In reviewing survey responses, leading insurers noted the following important elements of a comprehensive climate risk governance program:

- **Board-level Climate Risk Oversight:** Insurers' boards of directors are charged with taking a longer-term view of company strategy and risk. Leading insurers' boards have organized committees with clear mandates focused on evaluating climate risk.
- **CEO and Senior Management Priority:** Leading insurers noted that their CEOs and senior management receive regular briefings on the latest climate science and company exposures related to climate change. Senior management at these companies empowered committees of employees and/or management to investigate and provide reporting and proposals for addressing corporate climate risk.
- **Climate Risk Incorporated in ERM:** Enterprise Risk Management (ERM) frameworks seek to identify, measure, and actively manage all risks an organization faces across its enterprise.[58] Leading insurers indicated that climate change is a specific risk incorporated into their ERM processes.

Climate Risk Governance Leadership Examples

In order to accurately evaluate the wide range of risks confronting their customers, boards need access to expert analysis and reporting, as **Grinnell Mutual (GMRC)** indicates:

> *"GMRC does consider climate change as part of our Enterprise Risk Management (ERM) process especially as it relates to changing weather patterns impacting policyholder claims experience. The Risk Committee is responsible for overseeing and monitoring ERM which includes climate change issues. The Risk Committee regularly reports on risks and key risk changes, which includes climate change, to the board of directors."*

In order to comprehend the full range of risks posed by climate change, senior management must be regularly informed of how an insurer's risks and opportunities landscape changes over time, as **The Hartford** demonstrates:

> *"Alan Kreczko, General Counsel and Executive Vice President chairs The Hartford's committee on climate change, the "Environment Committee". In this capacity, Mr. Kreczko briefs the Legal and Public Affairs Committee of the board of directors annually, and a Committee member under his direction briefs the Executive Leadership Team (ELT) twice yearly. (The ELT comprises the company's 10 most senior company executives, including the CEO, CFO and Mr. Kreczko.)… The committee has been tasked by Senior Management with examining the risks and opportunities presented by climate change, assessing The Hartford's current approach to climate change, and assisting in the development of climate change-related strategies going forward."*

Senior management will be best advised regarding climate risk and opportunities if it grants institutional support to a standing committee dedicated to evaluating such topics, as **Catlin** outlines below:

> *"In additional to the individual judgment of our underwriters, Catlin several years ago established an Emerging Risks Committee, which is a institutionalized process for considering the impact of climate change risks, especially weather-related risks, on the company's business. The committee is chaired by the Group's Chief Science Officer*

58 Standard and Poor's, *Evaluating the Enterprise Risk Management Practices of Insurance Companies*, 2005, 3, http://www.actuaries.org.uk/system/files/documents/pdf/insurancecriteria.pdf.

and includes underwriting, actuarial and enterprise risk management (ERM) representatives. An emerging risk can be defined as an issue that could be potentially significant but which may not be fully understood in insurance terms and could affect how the company prices its products, reserves for future claims or allocates capital to specific business units."

Enterprise risk management, as a tool for aggregating and evaluating the risks across an organization, is only as effective as the risks and opportunities it is measuring. For a risk that cuts across company functions and business units such as climate change, it is imperative that companies allocate resources to tracking it, as **New York Central Mutual** notes:

"At this time, we continue to monitor our exposure due to climate change. This is monitored by our ERM committee, chaired by our Chief Risk Officer, who reports to the board of directors. We have a designated point person to coordinate climate change risk, as all areas of the corporation have been tasked with monitoring the risks to our operations related to climate change."

The Opportunity

With only seven percent of insurers earning a Leading rating regarding their Climate Risk Governance programs, and 31 percent of insurers earning the top two ratings combined, a general lack of management attention to climate risk leaves many P&C insurers highly exposed to unexpected and significant losses. In addition to protecting against current and evolving climate risks, there are strong business opportunities to be uncovered such as new climate-related product lines and climate-related investments.

- **Long-Term Perspective:** Regularly monitoring and addressing the specific and growing risks that climate change poses to an insurer's bottom line aids managers in considering timeframes beyond the one-year written policy window, as **Ironshore Indemnity** notes:

  "Risk Management monitors and reports the aggregation and concentration of policies underwritten in locations that are subject to increased catastrophe risks in location[s] such as the Florida coast. This information is reported internally and to the Underwriting & Risk Committee of the board of directors."

- **Enhanced Communication:** Robust ERM frameworks actively and deliberately facilitate the process of elevating risks up the chain of command within a company, as **Cincinnati Insurance**[59] demonstrates:

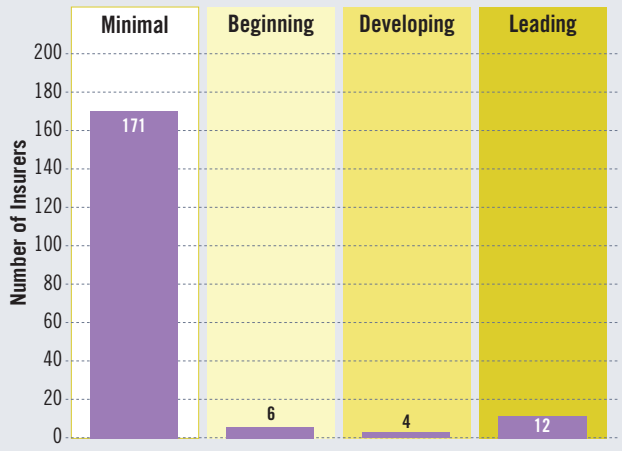
  "Identification and assessment of climate-change related risks are incorporated into our overall risk management program. Comprehensive risk assessments are periodically completed via interviews of dozens of business leaders in the company. Risks lists are compiled and scored by the interviewee group, then quantification and probability scenarios are developed by subject matter experts."

3.2 CLIMATE RISK MANAGEMENT STATEMENT

All insurers were scored on whether the company reported it had issued a public statement on its approach to climate risk management. As depicted in figure 3.3 on the following page, only 12 insurers reported having published robust climate policy statements. While a few insurers (ten in total) are in the process of developing climate policies, the large majority (88 percent) have not yet even begun this process. Nonetheless, there are a number of insurers who provided useful examples for others to consider.

59 Cincinnati Insurance Company was not a top Leading rank insurer on Climate Risk Governance, but indicated a novel method for aggregating risk assessments from across the enterprise.

FIGURE 3.3: PROPERTY & CASUALTY INSURERS CLIMATE POLICY STATEMENT BY RATING



Leading Insurers:

- ACE
- Allianz
- Allstate
- AIG
- AXIS Insurance
- Commerce Insurance
- FM Global
- Hartford Fire & Casualty
- Munich Re
- Sompo Japan
- Swiss Re
- Zurich

Total Companies = 193

The Importance of Climate Risk Management Statements

While many insurers indicate that they have policies governing risk management and investment management, climate change poses a growing threat to both aspects of insurers' operations. Leading insurers have developed and made publicly available and comprehensive climate change policies that catalyze responses across all business units. The essential components of a comprehensive climate change statement, based on the leading examples provided in insurers' responses to the survey, include:

- **Climate Science Confirmation:** Based on the latest available science, a clear understanding of the scientific consensus regarding climate change and the role of human activity in causing it.
- **Climate Risk Underwriting Consideration:** Explicit consideration of current and future climate change effects and their impacts on the frequency and severity of hazards that deviate from historical trends, as part of the corporate enterprise risk management (ERM) function.
- **Climate Risk Investment Consideration:** Explicit consideration of climate risk and environmental, social, and governance (ESG) issues as a component of analyzing the company's investment portfolio across investment classes.
- **Public Climate Engagement:** Promotion of and contribution to public policy and/or academic efforts that contribute to building a more resilient and sustainable economy and society.
- **GHG Reduction:** The implementation of a corporate greenhouse gas reduction program and related internal sustainability efforts to reduce and mitigate the company's contribution to greenhouse gases.

These policy statements describe a comprehensive corporate response to current and anticipated global climate risk by examining all aspects of an insurer's business within the context of a warming planet.

Public Climate Risk Management Statement Leadership Examples

A leading example from the top ranked responses is that of the **American International Group (AIG)**:

> *"AIG was the first U.S.-based insurance company to adopt a public statement on the environment and climate change, recognizing the scientific consensus that climate change is a reality and is in large part the result of human activities that have led to increasing concentrations of greenhouse gases in the earth's atmosphere. Climate change is seen as a serious global environmental problem with risks to the global economy and ecology, and to human health and well being, and AIG supports market-based environmental policies to address the problem."*

Allianz (parent company of **Fireman's Fund**) offers its perspective on the opportunities, as well as risks inherent in a changing climate:

> *"As an integrated financial services provider, we are well aware that climate change could result in a range of compound risks and opportunities that affect our entire business. As a result, we are committed to supporting the development of a low-carbon economy, and see this not just as a sustainability priority—but also a viable business and investment case. We are adapting internal policies and processes including risk management and investment management, as part of a comprehensive long-term climate change strategy [policy] first adopted in 2005…which also includes reducing our own carbon emissions and environmental impact…developing relevant products and services, leveraging climate change research, transparent communication with our stakeholders, and contributing to related public policy development."*

However, many large insurers still lack a public climate policy, despite those same companies taking action to mitigate climate risk in important areas of their businesses.

▶ The Opportunity

Given that only 12 percent of the 193 P&C companies issued a climate change policy, there is a huge opportunity to guide insurers in the process of drafting and adopting a formal climate change policy.

- **Build a Longer-Term Perspective:** By integrating input from across the corporation as well as key stakeholders, insurers can use the process of developing a climate change policy as a means of aligning the company's longer-term outlook with near-term concerns about risk exposures and capital adequacy.

  Munich Re Group indicates that it *"adopts a multidisciplinary approach to climate change (CC) risks, using and combining the experience/expertise of our scientists, specialist underwriters, lawyers, economists, and actuaries in a multidisciplinary company-wide risk management process. An in-depth understanding of risks is the basis of Munich Re's business, and CC is closely linked to our core business as it can have a financial impact on nearly all of our lines of business."*

- **Increase Organizational Alignment and Commitment:** A climate change policy development process should engage all levels of an insurer's corporate hierarchy, thereby mobilizing the company's leadership and staff toward a common goal that unlocks added value.

  The Hartford describes its collaborative approach: *"The Environment Committee, which was created in 2007 as part of The Hartford's public commitments on climate change, is made up of 17 company leaders across the enterprise, including risk management,*

service operations, representatives of the company's three main businesses (Consumer Markets, Commercial Markets and Wealth Management), and our investment company, as well as HR, Marketing and Communications and Government Affairs."

- **Reputational/Branding Benefits:** An insurer can garner significant reputational benefits by being proactive in assessing its climate-related risks and opportunities.

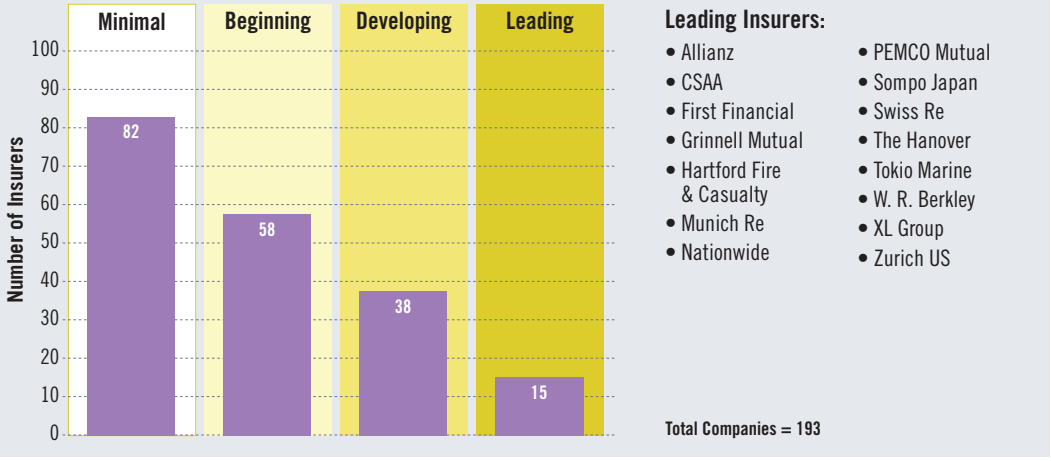
  Allstate notes that, with regard to its climate change response *"there is an opportunity for Allstate to build its reputation for its sustainability efforts among consumers and other key stakeholders who are increasingly interested in the environment and the impacts of climate change on our company. This opportunity could enhance customer and consumer consideration thereby potentially increasing Allstate's customer base."*

3.3 ENTERPRISE-WIDE CLIMATE RISK MANAGEMENT

The Enterprise-Wide Climate Risk Management theme focuses on how insurers identify, assess, and manage risks and opportunities to their businesses stemming from climate change. These survey questions range quite broadly, encompassing:

- **Products & Customers:** Does the insurer foresee climate change impacting consumer demand for insurance products; which business segments/products are most exposed to climate risk; and does the company examine the geographic spread of property exposures in relation to expected climate change impacts?
- **Investments:** Does the insurer consider climate risks (across all asset classes) when assessing investments; does the insurer use a shadow price for carbon in assessing carbon-intensive heavy industry investments; and does the insurer have a system for managing correlated risks between its underwriting and investments?
- **Liquidity and Capital Management:** Does the insurer consider climate risks with regard to liquidity and capital needs, terms and costs of catastrophe reinsurance, and how regularly does the insurer reassess climate risk?

FIGURE 3.4: PROPERTY & CASUALTY INSURERS ENTERPRISE-WIDE CLIMATE RISK MANAGEMENT BY RATING



Out of 193 P&C insurers, eight percent earned the Leading rating, with another 20 percent earning the Developing rating, leaving 72 percent with the lower two ratings. Notably, a number of companies scored well on one or two of the questions, but lagged on others.

The Importance of Enterprise-Wide Climate Risk Management

Insurers face climate risks on both the underwriting (liability) and the investment (asset) sides of their balance sheets. Insurers with leading practices are tracking climate risk across their various operational areas in a holistic manner. For example, **ACE** demonstrates a robust method for evaluating and elevating risks to senior management levels where warranted:

> *"Risks are evaluated at least annually at three governance levels, with the company's senior management actively engaged in each. The company's ERM board, product boards and credit committees meet as frequently as monthly to evaluate specific risks and risk accumulations in ACE's business activities and investments, while the board of Directors' Risk Committee meets regularly with company management."*

XL Group describes a systematized approach to assessing emerging claims related to climate litigation:

> *"We currently track XL climate change-related claims as part of our quarterly Emerging Risks reports. Given the potential for climate change litigation, we have also analyzed how our outward reinsurance contracts would respond to any claims where XL would be required to make payment (defense, indemnification, etc.) to a policyholder or ceding company client."*

PEMCO Mutual offers an example of an insurer assessing and acting upon a range of climate risks to its investment portfolio:

> *"Built into our investment strategy is the common sense consideration of the effects of climate change upon certain investment alternatives. Among other steps taken… the company does not generally invest in utilities or coal producers."*

The Sentry[60] outlines its view on the range of clean energy investments it makes with an eye toward investing in renewable energy:

> *"Climate change issues and the resulting governmental policy impact are creating opportunities in "Green Technology" investments. These investments are a sizeable portion of our Private Equity and Venture Capital portfolios, with investments in wind and solar power generation being the major category."*

With GHG-related regulations on heavy industry advancing on multiple fronts, **Hanover Insurance** provides an example of an insurer that takes carbon risk into account when considering its utility sector investments:

> *"Climate change and the resultant potential for regulatory pressure on the utility industry continue to be an important factor in our analysis of the utility sector for at least the last 18 months. As an investor in electric and gas utility bonds and stocks, we are concerned about the potential for higher costs from regulatory efforts to combat global warming (i.e. the carbon tax, clean air standards, etc.) and the effects these would have on utility industry profitability.*

Insurers with leading practices such as **W.R. Berkley** indicated that they have a formal process to evaluate real estate investment decisions which take climate-related catastrophe risk into consideration:

> *"When considering real estate purchases, the Investment team considers the exposure to catastrophe at that location. When there is a risk of catastrophe, the ERM team works with the Investment team to assess that risk, and this assessment is taken into consideration when determining whether to proceed with the purchase"*

60 Although not a top scoring insurer on this measure, The Sentry Insurance is an example of a company taking advantage of clean technology investment opportunities.

The Opportunity

With 28 percent of insurers earning the top two ratings, insurers have a major opportunity in developing stronger, more integrated, and comprehensive enterprise-wide climate risk management protocols. The potential benefits of such efforts are substantial.

A risk management program that considers climate-influenced catastrophe risk correlations across both underwriting and investment business lines can ensure that risks and opportunities are balanced and coordinated. Holistic enterprise risk management operations that take climate risk into account through catastrophe modeling and other measures can more accurately price (subject to regulatory constraints) mounting extreme weather risks due to climate change.

Furthermore, with the ongoing maturation of renewable energy technologies, as well as the development of new investment and securitization vehicles in clean energy, insurers are presented with unprecedented opportunities to profit from investments in climate change mitigation.

3.4 CLIMATE CHANGE MODELING & ANALYTICS

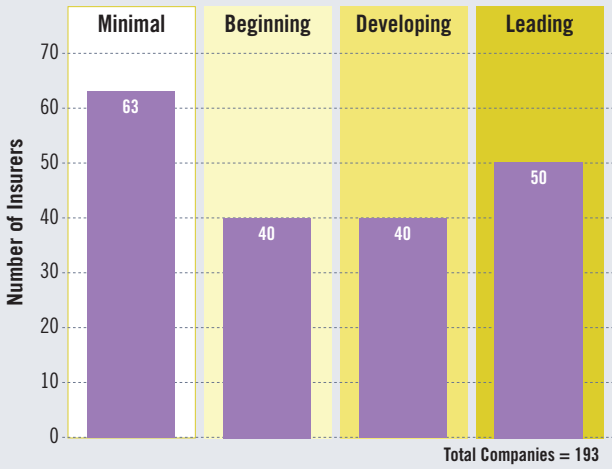
In this category insurers were scored on three measures:

- Whether the company has taken steps to model and/or analyze perils associated with non-stationary hazards that deviate from historical trends.
- Whether the company has used catastrophe models to perform hypothetical "stress tests" to determine the implications of a range of plausible climate change scenarios.
- Whether the company has conducted, commissioned, or participated in scenario modeling for climate trends beyond the 1-5 year timescale.

Compared to other themes, the Climate Change Modeling & Analytics results show a more even distribution, with about 26 percent of P&C insurers earning a Leading rating, 42 percent of insurers earning the second and third ratings, and 32 percent earning Minimal ratings.

The relatively strong results regarding the use of modeling and analytics in assessing climate risk reflects the beginnings of a strategic transformation in the use of these technologies within the industry. Faced with more frequent severe weather events and sea level rise, insurers are increasingly concerned that their catastrophe modeling tools fully integrate the effects of climate change.

FIGURE 3.5: PROPERTY & CASUALTY INSURERS CLIMATE CHANGE MODELING & ANALYTICS BY RATING



Leading Insurers:

- ACE
- Acuity Mutual Group
- Alfa Mutual Insurance Co.
- Allianz Insurance Companies
- Allied World Assurance
- Alterra America Insurance
- American Family
- Arbella Insurance Group
- Arch Insurance Group
- Aspen Insurance
- Auto Club Insurance Asso.
- Capital Insurance Group
- Catlin
- Church Mutual Insurance
- Cincinnati Financial
- CSAA Insurance Group
- EMC Insurance Companies
- Enumclaw Insurance
- Farmers Insurance
- First Financial Insurance
- General Security Indemnity
- Grange Insurance Group
- Greater New York Insurance
- Grinnell Mutual Group
- GuideOne Insurance Group
- Hartford Fire and Casualty
- Homesite Insurance Group
- IAT Group
- Ironshore Indemnity Inc.
- Liberty Mutual
- Merchants Mutual Ins.
- Munich Re Group
- Nationwide Insurance
- PEMCO Mutual Insurance
- Privilege Underwriters Reciprocal
- Progressive Insurance Gp.
- Protective Insurance
- Quincy Mutual
- RSUI Indemnity
- Sompo Japan Insurance
- Swiss Re Group
- The Sentry Insurance Gp.
- Tokio Marine Holdings, Inc.
- United Fire Group
- Utica National Insurance Gp.
- W. R. Berkley Corporation
- WBL Group
- Westfield Insurance
- XL Group
- Zurich US

The Importance of Climate Change Modeling & Analytics

Sophisticated, complex tools demand a high level of operator expertise and comprehension to be used effectively. The vast amount of information used by catastrophe models, comprising historical weather records, insured property data, and assumptions regarding future climate conditions, require that company staff and teams operating the 'cat' models have a broad and deep range of expertise. Adding to the complexity, many insurers aggregate outputs from different vendors' models to reduce the range of uncertainty to manageable levels.

There are substantial benefits for insurers that effectively *quantify risk exposures* through the use of cat modeling. Ceres' review of the survey results indicates that insurers that fully integrate catastrophe modeling into their risk management programs, through both their underwriting and investment functions, are best positioned to both protect their businesses and capitalize on opportunities in a changing climate. Key features of a climate-informed catastrophe modeling and analytics system, as indicated by the leading insurers below, are:

- **Multi-Source Data Integration:** Insurers with leading practices acknowledge the limitations of their catastrophe modeling systems in projecting climate-related catastrophe impacts. These insurers showed that they are mitigating the risk of relying too heavily on one model's output by blending the outputs of multiple cat models and integrating data from academic or other sources into their models.
- **Stress Testing:** Insurers with leading practices subject specific lines of business to stress tests by utilizing projections of possible future perils that are more severe than historical experience. By doing so, they help ensure capital adequacy in the case of major events.
- **Medium to Long-Term Modeling:** Insurers with leading practices employ projections in their cat models that allow them to make forecasts beyond five years. These longer-term projections allow insurers to evaluate the future insurability of various locales or regions in a climate-changed world and adapt their business strategies accordingly.

Climate Risk Leadership Examples

Liberty Mutual's response outlines how it integrates information from internal data sources, external scientific research, and the outputs of multiple catastrophe simulators:

> *"Liberty Mutual rigorously utilizes the latest exposure simulation models from AIR, Risk Management Solutions and Eqecat as the foundation for estimating potential natural catastrophe exposures. These models are kept up to date with the latest versions that incorporate the most recent scientific advances in the estimation of the Company's natural catastrophe exposures. Recognizing that there can be significant uncertainty in catastrophe models for various perils, Liberty Mutual has a Catastrophe R&D team whose purpose is to augment the models with information from external scientific sources and the Company's historical losses. In this way, the Company seeks to improve the predictive value of catastrophe models and obtain the most accurate estimates of natural catastrophe exposure."*

Arbella Insurance Group describes leading practices for stress testing, which helps in evaluating capital adequacy, as well as supporting strategic planning and underwriting decisions:

> *"The Company utilizes computer models to create a distribution of expected losses from various weather perils. These models are run using both a long term and a medium term view of weather patterns as well as with and without storm surge. The Company utilizes this distribution of estimated losses to perform various stress tests to evaluate*

the company's exposure to more severe losses than experienced using historical experience. We continuously assess the impact of various modeled scenarios in regards to capital adequacy and business continuity. Stress testing is done at various modeled probabilities to assess the amount of surplus at risk at various points across the probability curve. Understanding our Potential Maximum Loss (PML) from these events is inherent in underwriting decisions, strategic planning and capital management."

CSAA shows how it projects climate risks forward in its catastrophe modeling as a way of planning for a warmer future.

"We utilize catastrophe models of two major third-party modeling vendors to assist in determining our reinsurance program structure, and we purchase to a very conservative return period, in order to appropriately protect our policyholders…While we are not overly exposed to loss from hurricanes, the catastrophe models we employ are, themselves, now utilizing conservative assumptions—a "medium-term" hurricane event set, representing the next five years of expected activity, as opposed to the historical record of activity, and a "warm sea-surface temperature" event set. Such event sets are also often called "near-term". And, of course, we also write in states prone to non-hurricane wind losses, and must therefore consider trends in those types of losses as well."

The Opportunity

Overall, 47 percent of P&C insurers earned either Leading or Developing ratings in the Climate Change Modeling & Analytics category. Licensing catastrophe modeling software and hiring or contracting for the technical expertise to use the software are significant investments for smaller insurers. Still, such investments can yield important dividends in avoided and/or mitigated losses. Insurers with leading practices explain how they have achieved numerous business benefits by integrating climate impact projections into their catastrophe modeling, including for example:

- **More Accurate Pricing:** Insurers with leading practices are using climate-informed catastrophe modeling software to ensure that their premiums accurately reflect the catastrophe risk for a given property.[61] Using climate change forecasts combined with data on policies in-force, insurers can estimate their overall risk concentration and the need to purchase reinsurance coverage. **Merchants Mutual** offers such insights in explaining its new software program:

  "Through tools provided by our reinsurance partners and others, we manage our risk concentrations and distance to coast. Merchants is also implementing a leading-edge software tool from our reinsurance partners that will aid us in managing and tracking our weather related exposures by ensuring at the point of sale that all costs associated with catastrophe risk are recouped through the policy premium."

- **Reduced Model Bias:** Insurers with leading practices use processes to "double-check" the catastrophe models they license, to ensure that their catastrophe risk management programs are not overly dependent on what may be biased or incomplete data outputs. **W.R. Berkley** describes how its teams test the accuracy of the models, giving the company a nuanced view of the models' strengths and limitations:

  "The ERM and Catastrophe teams investigate the possibility of "model miss" within vendor catastrophe models; this includes a comparison of modeled industry losses against revalued historic losses, investigation of individual sub-components within the model, and "stress testing" model frequency and severity assumptions."

61 It is well understood that, in many jurisdictions, regulatory constraints may limit the accuracy of risk-based premiums charged to policyholders.

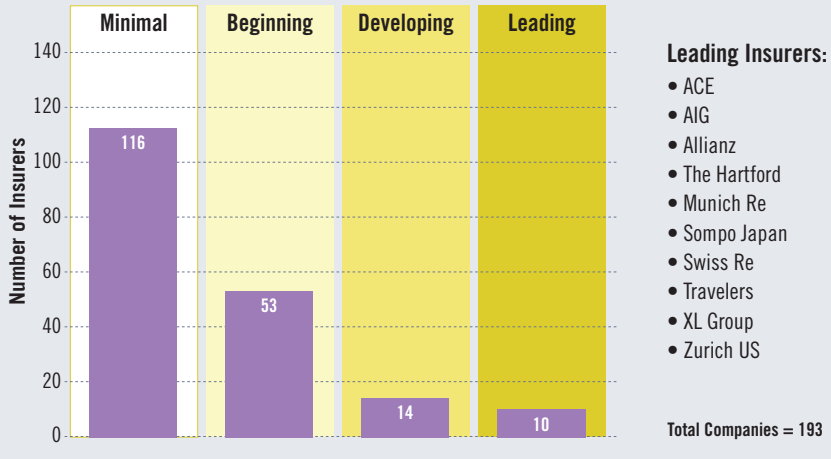
- **Technical Capacity-Building:** Insurers that substantively engage with their catastrophe models, particularly in comprehending those models' assumptions related to climate change risk, are actively cultivating valuable technical expertise within their workforces. As the cat modeling industry shifts in the coming years, and as a changed climate is more fully reflected in extreme weather patterns, having a skilled employee base will be a major asset for insurers, as described by **Westfield Insurance Company**:

  "Tools and methods that are independent of modeled results include the following: analysis of trends in historical catastrophe loss, deterministic scenario analyses, case studies, and quantification of non-modeled perils and exposures. Long-term demographic, sociological, and climate trends are also considered. The knowledge gained through these activities provides valuable insight that is used to help form our strategies related to catastrophe exposure management, capital deployment, reinsurance, coverage, and pricing."

3.5 STAKEHOLDER ENGAGEMENT

Survey questions related to Stakeholder Engagement focus on the degree to which an insurer seeks to influence as well as learn from key stakeholders, including customers, shareholders and the public, on the issue of reducing climate risk. The survey asks whether insurers offer products or incentives to encourage policyholders to reduce their climate risks. It also asks whether they are supporting climate change research to help increase societal understanding of climate risks.

FIGURE 3.6: PROPERTY & CASUALTY INSURERS STAKEHOLDER ENGAGEMENT BY RATING



Top scores were awarded to insurers showing, in specific detail, that they have engaged with key constituencies, including policyholders, investors and the public, on climate risks. With only five percent of the 193 P&C insurers earning a Leading rating, and seven percent earning a Developing rank, this sector is clearly lagging in climate-related stakeholder engagement.

The Importance of Stakeholder Engagement

Insurers have multiple levers at their disposal to promote climate mitigation and adaptation. Such loss-reduction efforts and awareness-raising practices serve dual purposes: to help insurers financially withstand climate-related catastrophes, and to catalyze society broadly to become more resilient. Initiatives to help build stronger, more resilient communities and support low-carbon solutions—especially clean energy technologies—represent significant business growth opportunities for insurers. Adequate, available insurance is a key component of scalable resiliency and carbon mitigation investments—whether for individuals, businesses or public entities.

- **Climate-Aware Insurance Products:** Generically referred to as "green" insurance products, insurers have increasingly been developing new products and/or policies that facilitate their customers' investments in sustainability.[62]
  - **Personal Lines:** The most common climate-aware insurance products are "green replacement" policies, which offer policyholders the ability to build or rebuild/replace to higher standards of sustainability (such as Energy Star® equipment or hybrid/electric vehicles) in the event of a covered loss, or offer premium discounts for the purchase of such items. Underwriting specific to rooftop solar PV and/or small wind power installations are also highlighted by survey respondents.
  - **Business Owners Policies:** Insurers with leading practices are expanding their product offerings to business customers by offering energy efficient and resilient rebuilding (to LEED standards, for example), as well as coverage for renewable energy generation equipment.
  - **Engineered Risks:** A few insurers disclosed that they are underwriting industrial-scale renewable energy projects. Given the rapid growth of renewable energy installations in recent years, a small number of leading insurers are developing the underwriting expertise necessary to move into this space.
  - **Climate Liability Coverages:** Insurers with leading practices stated that they are aware of the risk of liability claims arising from climate-related litigation, and have responded by introducing new liability products, climate change liability coverage extensions for existing products and exclusions for clients in certain industries.
- **Climate Risk Outreach:** Insurers can leverage their unique comprehension of climate risks to engage broader society through distinct channels of influence, thus building societal resilience and reducing insurers' climate risk exposure in the long-term.
  - **Research Support:** Insurers with leading practices partner with independent research organizations to support original research on climate change risks and impacts. Insurers also engage with a range of industry associations to produce targeted research that advances industry understanding of climate risk.
  - **Policyholder Engagement:** Insurers with leading practices indicated they have created customer-facing website portals, informational materials, and in some cases, risk assessment tools to educate policyholders about climate risk.

Climate Risk Leadership Examples

Allianz' response to the Survey describes how the company classifies and develops climate-aware insurance products and services across business lines:

> *"Allianz offers its retail and commercial customers a growing range of green products and services supporting a low-carbon economy, protecting the environment and helping clients prepare for the negative effects of climate change and/or mitigate associated economic risks. By 2013, Allianz Group offered its clients more than 130 such products and services worldwide…"*

62 Evan Mills, 2012. "The Greening of Insurance," *Science* 338, 1424, December 14. http://www.sciencemag.org/content/338/6113/1424.summary.

The Hartford discusses how it is seizing industrial-scale clean energy underwriting opportunities:

> *"The Hartford recognizes the growing opportunities for insurers to offer products and services that help our commercial and individual policyholders move to renewable energy and reduce their own greenhouse gas emissions. The launch in 2010 of The Hartford's Renewable Energy Practice to insure the wind, solar and fuel cell industries is recognition of this growing opportunity. In 2011, this unit won the bid to insure the largest private solar panel installation in the Western Hemisphere."*

Swiss Re describes how it has devoted significant resources to climate risk engagement with stakeholders:

> *"To educate the public and industry alike about the increased risk of natural catastrophes posed by climate change, Swiss Re released its Flood Risk App in August, 2012… available for free on the iTunes App Store. The Flood Risk App gives a general understanding of flood risks and explains how to manage and insure these risks. The App explores different types of flooding and the challenges involved in making floods insurable. It highlights the importance of adapting to climate change and shows how reliable flood information can strengthen flood preparedness."*

The Opportunity

Only 12 percent of P&C insurers earned the top two ratings on Stakeholder Engagement. Clearly, the potential benefits from insurers increasing their outreach to stakeholders through climate-related product offerings, research support and stronger disclosure remain largely untapped.

- **Shaping the Agenda:** As an industry singularly exposed to climate risk, P&C insurers have a unique platform to advocate for solutions to climate risk. Rather than being reactive to climate events, insurers can encourage pro-active measures by policymakers and regulators, as **ACE** articulates through this response:

  "[ACE holds] Membership in the Geneva Association (genevaassociation.org), an international insurance think tank representing 90 global insurance organizations, whose Climate Risk and Insurance project has been outspoken on climate change issues. ACE was part of a working group that produced a report on ocean warming and the implications for the insurance industry."

- **Developing Internal Expertise:** Leading insurers indicated that their staffs' engagement with cutting-edge climate science research helped those companies realize the benefits of increased employee expertise on climate-related topics through the development of more robust catastrophe models, as **Aspen**[63] notes:

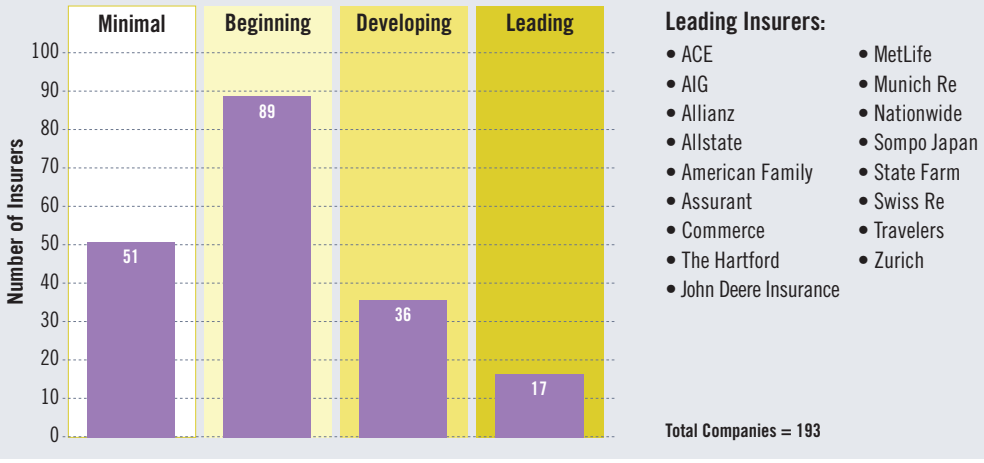
  "Aspen is heavily invested in research initiatives on natural hazards and climate. This includes not only an in-house R&D team established in 2008 but also support for the Risk Prediction Initiative (RPI) in Bermuda and the Institute for Business and Home Safety (IBHS). In-house research includes the consideration of climate change and climate variability in catastrophe modeling, e.g., by developing Aspen's own medium-term rates to the RMS hurricane model for the Atlantic basin."

63 Although not a top scoring insurer on this measure, Aspen Insurance is an example of a company directing substantial resources toward public climate change research that it also benefits from.

3.6 INTERNAL GREENHOUSE GAS MANAGEMENT

Insurance companies are not major greenhouse gas (GHG) emitters compared to many other sectors, though the industry's heavy reliance on data processing does result in a larger GHG footprint than might be expected. Many insurers have taken proactive steps to reduce their environmental footprint, often as a means of reducing expenses. GHG reduction strategies are often a key element of corporate social responsibility (CSR) programs.

FIGURE 3.7: PROPERTY & CASUALTY INSURERS GHG MANAGMENT PROGRAMS BY RATING



Insurers were scored based on their stated emissions assessment and reduction plans. Full points were awarded to companies that completed annual emissions inventories according to established reporting standards, and described their reduction efforts in detail, including specific metrics. Clear reduction targets and timeframes for achieving them were also considered.

Nine percent of the P&C insurers earned the top rating, and 28 percent—53 companies—earned one of the top two ratings, demonstrating that barely one-quarter of P&C insurers have taken even moderate steps to tackle GHG emission reductions. A significant majority indicated little or no action in this regard.

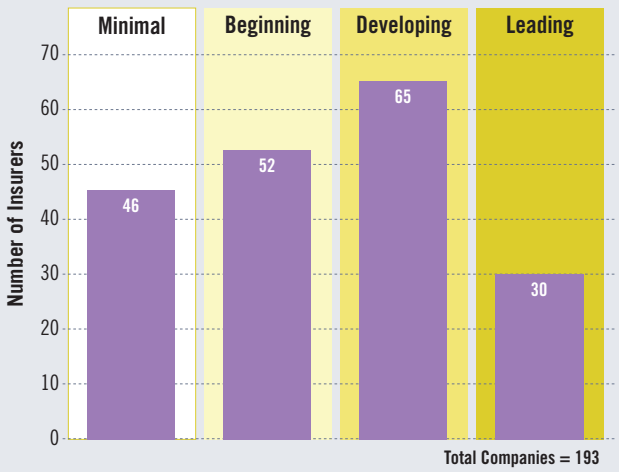
While some insurers indicated that they have taken action to assess, mitigate, and reduce their GHG emissions, compared to other corporate GHG disclosure processes, the questions asked in the Climate Risk Disclosure Survey are not specific enough to gain a detailed understanding of insurers' efforts. For example, Ceres' Gaining Ground report evaluated "whether companies had programs and targets for reducing GHG emissions and increasing renewable energy procurement, and, if so, whether those programs are improving carbon intensity trends (CIT) and the percentage of renewable energy sourced."[64] In comparison, question one of the survey asks simply: "Does the company have a plan to assess, reduce or mitigate its emissions in its operations or organizations?"

64 Ceres and Sustainalytics, *Gaining Ground: Corporate Progress on the Ceres Roadmap for Sustainability: GHG Emissions and Energy Efficiency;* accessible at http://www.ceres.org/roadmap-assessment/progress-report/performance-by-expectation/performance-operations/ghg-emissions-and-energy-efficiency-1.

3.7 CLIMATE RISK DISCLOSURE & REPORTING

The final area scored was the overall quality and comprehensiveness of the Climate Risk Disclosure Survey responses, in particular their level of detail on actions being taken and quantitative data in support of companies' assertions.

FIGURE 3.8: PROPERTY & CASUALTY INSURERS CLIMATE RISK DISCLOSURE & REPORTING BY RATING



Leading Insurers:

- ACE Ltd. Group
- Alfa Mutual
- Allianz
- Allstate
- American Family
- AIG
- Amica Mutual
- Aspen Insurance
- Catlin Inc.
- Church Mutual
- Cincinnati Financial
- CSAA Insurance Gp.
- EMC Insurance
- Farmers Insurance
- First Financial
- General Security Indemnity
- Grinnell Mutual
- Hartford Fire & Casualty
- Ironshore Indemnity
- Liberty Mutual
- MMG Insurance
- Munich Re
- PEMCO Mutual
- Privilege Underwriters
- Sompo Japan Insurance
- Swiss Re
- W. R. Berkley Corporation
- Westfield Insurance
- XL Group plc
- Zurich US

Fifteen percent of the P&C insurers earned a Leading rating and 34 percent earned a Developing rating. Overall, the results show that a significant number of insurers provided adequate disclosure, although the remaining 51 percent could do far better.

Specific examples of best practices include the following:

Detailed Information

Companies with leading practices included detailed descriptions of their internal processes and policies for researching, assessing and incorporating climate risk data into their underwriting and investment processes. **Munich Re** offers an example of robust reporting on its internal model for climate risk management, an excellent template for other insurers to consider:

> *"Together with Corporate Underwriting (CU), experts ensure that CC [climate change] considerations are incorporated in our risk assessment/management, business/product development and asset management. Research findings are passed on to CU and Integrated Risk Management (IRM) and used for product design/pricing, accumulation control and adjustments to natural catastrophe models, and are also factored into our risk capital model calculations and risk strategy. Risk information is collated by IRM and incorporated in control, management and operational processes at the relevant units. We provide individual support in the quantification and management of CC risks. A core component in the identification of risks is an IRM approach involving underwriters/client managers to ensure direct access to markets and dialogue with clients, i.e. an early-warning system that ensures that physical and regulatory risks are identified and assessed at an early stage, and Centers of Competence with experts who specialize in risk identification and analysis in specific lines such as liability and geo risks research."*

W.R. Berkley's response included a detailed description of the company's policies and procedures for mitigating risks and maximizing opportunities. The company also discussed its assessments of catastrophe risk across a number of perils, including hurricanes, tornados, floods, droughts and wildfires. This passage below regarding its assessment of tornado risk provides important insight on the company's risk management culture.

> *"As noted in section 3, over the period from 1950 onwards the number of tornados is not increasing. In older calendar years there was significant under-reporting of the weakest category of tornado (EF-0); if one considers all other tornado strengths there is no trend in the frequency of these events or in the number falling into each strength category EF-1 to EF-5…When tornado insured losses are normalized for changes in exposures (for example, the number and values of the buildings and contents, often in areas that were previously agricultural land), these too show no increasing trend… The Group models tornado losses in every state within the USA, and has also revalued the tornados reported by the ISO Property Claims Service (PCS) from 1950 onwards to allow for changes in exposure as an additional data source."*

The Opportunity

To report on their management of climate risks, insurers must first identify and assess their climate-related threats across business units. While ERM practices are designed to capture potential threats from across an entire organization, climate risk disclosure focuses attention on a specific risk. Below are examples of business opportunities related to climate risk disclosure and reporting:

- **Establishing Goals:** Insurers that publicly disclose corporate goals regarding GHG reductions and other climate risk management efforts challenge their organizations and employees to improve their operations and create more value for stakeholders. Such goal setting can help organizations remain focused towards common objectives across business units.
- **Measuring Progress:** The disclosure process involves gathering information from internal stakeholders across the entity, thus creating opportunities for insurers to assess where the company is today, and its future goals in addressing climate change. Organizations that have developed internal climate risk assessment and reporting procedures are well prepared for disclosure activities.
- **Communicating with Stakeholders:** In conjunction with annual sustainability and GHG emissions reporting, comprehensive climate risk disclosure and reporting offers insurers a further venue for communicating their corporate social responsibility (CSR) credentials to the public. Furthermore, climate risk disclosure can reassure policyholders, investors and regulators that insurers are taking the business risks of climate change seriously.

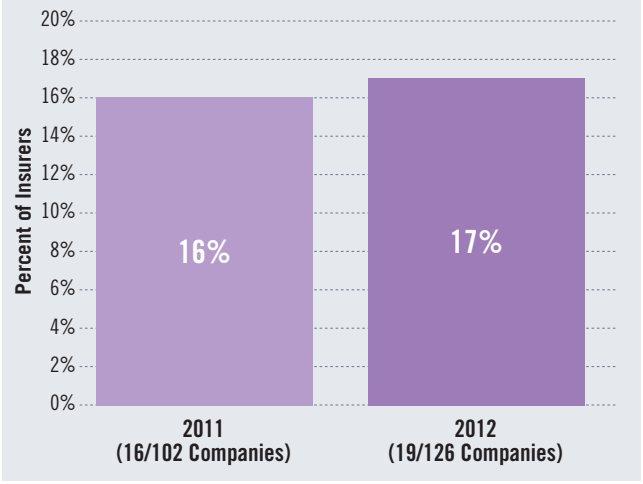
AIG provides an example of risk disclosure to stakeholders:

> *"Risks driven by changes in other climate-related developments may include 1) reputational risk (i.e. potential impacts associated with negative perceptions experienced by the public as well as suppliers and customers around AIG's carbon performance), and 2) societal change or changing consumer behavior, (i.e. climate change induced changes in customer preferences for products and services). At this time, AIG does not consider these risks to have a substantive impact on revenues, expenditures or business operations, but they are recognized as important drivers that may shape future considerations and strategies."*

3.8 YEAR-OVER-YEAR CLIMATE RISK MANAGEMENT STATEMENT COMPARISON

In comparing this year's responses to the prior year, we focused only on the objective question of whether a P&C insurer has a public climate risk management statement or not.[65] We limited the comparison to companies with over $300 million in direct premiums in 2012.

FIGURE 3.9: PROPERTY & CASUALTY INSURERS WITH A CLIMATE POLICY STATEMENT ($300M+ IN DWP)



The chart to the left indicates virtually no change in the proportion of companies with a public climate risk management statement in place: 17 percent in 2012 compared to 16 percent in 2011. Despite a 20 percent increase in the number of companies analyzed, there has been virtually no change in the results.

The results make clear that the vast majority of P&C insurers have no climate change policy in place, nor do they indicate plans to do so. Companies' willingness to implement strong climate risk management statements—or not—will be a key metric in measuring the industry's overall engagement on climate risks.

65 See Section 3.2 for further discussion of this year's climate risk management statement results.

CHAPTER 4

Life & Annuities Insurers Survey Findings

4.1 CONTEXT AND OVERALL SCORES

Life & Annuity insurers face a different set of risks than do P&C companies. However, a changing climate will still have major implications for this industry segment. L&A insurers must confront climate change risks in their investment strategies and insurance products, although, based on the survey responses, very few are doing so right now.

L&A insurers have trillions of dollars in investments that will be affected by climate change.[66] Managing L&A investment portfolio climate risks is especially important given that L&A insurers manage 65 percent of the U.S. insurance industry's total cash and invested assets, as of year-end 2012. P&C insurers, on the other hand, held 30 percent, most of them in fairly short-dated instruments.[67]

Climate change is expected to impact virtually every sector of the economy, whether through supply chain disruptions, operational impacts or commodity price volatility. If insurers do not manage their investments with this reality in mind, they risk jeopardizing their returns and their long-term capacity to meet their liabilities. L&A companies also have extensive real estate holdings and mortgage-backed securities portfolios, which could decrease in market value or become damaged/destroyed by increasing extreme weather events.[68] Because L&A insurers hold long-term assets to fund their long-term contractual obligations to pay their policyholders, the implications of climate change over the duration of those investments is of particular relevance.

L&A insurers should also be paying attention to how global warming will impact mortality risks. Climate change is expected to impact human health in various ways. The U.S. is already seeing a marked increase in extreme summer heat[69] and the U.S. Centers for Disease Control is predicting heat-related death rates will increase as much as seven-fold by mid-century if current GHG emissions are not reduced.[70] The recent National Climate Assessment predicted that future climate change impacts such as increased extreme weather events, wildfires, and poor air quality could also increase mortality rates.[71] Furthermore, threats to human health are also predicted from increased incidences of vector-borne diseases such as Lyme tick disease, dengue fever and West Nile virus.[72]

66 Insurance Information Institute, *Investments*, http://www.iii.org/facts_statistics/investments.html.

67 NAIC & The Center for Insurance Policy and Research, *Capital Markets Special Report: Year-end 2013 Insurance Industry Investment Portfolio Asset Mixes*, May 6, 2014, http://www.naic.org/capital_markets_archive/140506.htm.

68 Insurance Information Institute, *Investments*, http://www.iii.org/facts_statistics/investments.html.

69 US Global Change Research Program, *Human Health*, http://nca2014.globalchange.gov/report/sectors/human-health.

70 Centers for Disease Control and Prevention, *Heat Waves*, December 14, 2009, http://www.cdc.gov/climateandhealth/effects/heat.htm.

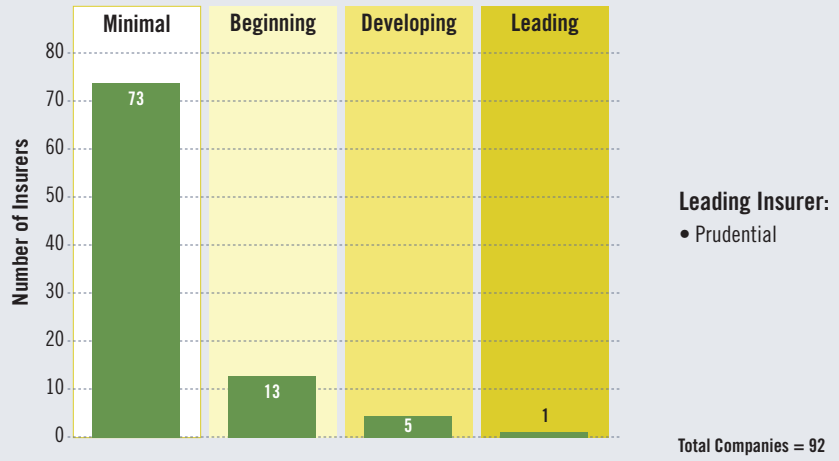
71 US Global Change Research Program, *Climate Change Impacts in the United States: Third National Climate Assessment*, 9, http://www.globalchange.gov/ncadac.

72 Ibid.

This chapter will examine L&A insurers' performance across a range of metrics, with a particular focus on climate risk governance and climate risks in investment portfolios. Due to the fact that the Survey is not specifically tailored to the unique characteristics of the life insurance sector,[73] as well as L&A insurers' generally poor performance, this chapter will not provide as much detail as the P&C portion of the report.

Overall, L&A insurers report little or no action to reduce their climate risks, nor do they show a strong understanding of these threats. Given the survey's primary focus on P&C firms, we adjusted the scoring framework in evaluating L&A responses. However, even with these modifications, L&A insurers performed much more poorly than P&C firms. Only one of the 92 L&A companies earned a Leading rating, while 79 percent of L&A companies earned the bottom Minimal rating.

FIGURE 4.1: LIFE & ANNUITY INSURERS OVERALL RATINGS



Most L&A insurers indicated that they do not believe they face significant risks from climate change. Some, such as **Gerber Life**, acknowledge that P&C companies face material risks from climate change, but believe that as a life insurance company they will not face similar risks.

> *"Gerber Life believes that climate change risk is significantly more relevant for property/casualty insurers than life insurers."*

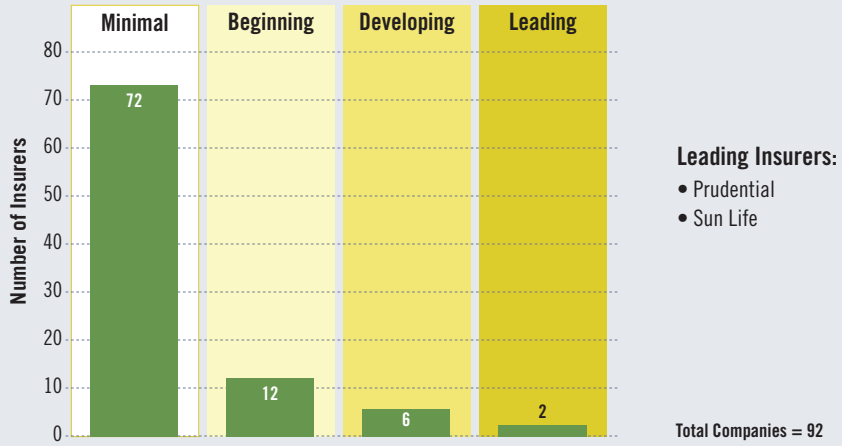
While the L&A sector lags significantly behind the P&C sector in identifying and responding to climate risks, there are some insurers who are taking concrete, positive actions in important areas.

73 See Chapter 6, Recommendations, for more information on the challenges with the survey.

4.2 CLIMATE RISK GOVERNANCE

In response to questions about climate risk governance practices, two leading companies outlined their governance systems for identifying, monitoring and acting on climate risks at the board and senior management levels. Very few L&A insurers indicated having such systems in place. Nearly 80 percent of all L&A companies earned the lowest Minimal rating.

FIGURE 4.2: LIFE & ANNUITY INSURERS CLIMATE RISK GOVERNANCE BY RATING



Prudential[74] stands out for making environment and sustainability issues a board-level responsibility. In 2012, the Governance and Business Ethics Committee of Prudential's board of directors expanded its charter to include the following. "Candidates for Prudential's board will be assessed on their experience and qualifications related to environment and sustainable business practices." Prudential also has an Environmental Task Force to monitor climate change related issues. The task force is led by the Vice President of Environment and Sustainability and is housed in the office of the Chief Governance Officer.

In its survey response **Prudential** outlines its climate risk management process, highlighting its integration with the company's overall risk management practices, and the use of climate change risk models to better understand potential impacts.

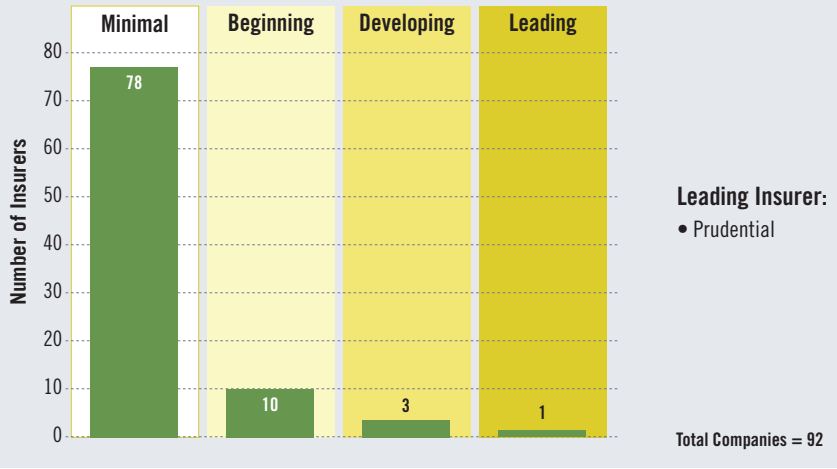
> *"Within each individual business, and as part of its standard risk management practice, Prudential examines the potential for climate change-related risks and assesses the degree that they could affect the businesses. There are also risk management programs, like Prudential's Business Continuation planning, which include a Health Risk and Pandemic Planning component. They have looked at enterprise-wide risks resulting from climate change risk models such as the impact of natural disasters or the growth of contagious illnesses beyond the previous areas of infection."*

74 In the interests of transparency, please note that Prudential Financial, Inc. is a member of the Ceres Company Network, although this fact was not taken into account in evaluating the company's survey response. More information on the Company Network can be found at http://www.ceres.org/company-network.

4.3 CLIMATE RISK AND INVESTMENTS

Insurers were asked about their investment management practices, and if they have considered climate impacts on their portfolios. As shown in Figure 4.3, most L&A companies did not provide substantive information in their survey responses. Only four percent of L&A companies earned the top two ratings, and only one insurer earned the top rating. However, a handful of insurers issued strong commentary.

FIGURE 4.3: LIFE & ANNUITY INSURERS INVESTMENT MANAGEMENT BY RATING



Some insurers highlighted concerns about high-emitting sectors in their investment strategies. **Boston Mutual** noted an important policy in place to reduce carbon risk:

> *"We account for climate change in our risk management by adhering to investment guidelines that would not allow us to invest a significant % of the book value of our assets in any industry that has a large carbon footprint."*

Lincoln National noted similar concerns regarding its real estate portfolios:

> *"All real estate related investments are screened with respect to climate change factors. These risks may come in many forms including operational, market, liability, policy and regulatory risks"*

Another way insurers are managing these risks is by partnering with broader climate-focused investor initiatives such as the Investor Network on Climate Risk (INCR) and the United Nations-sponsored Principles of Responsible Investment (PRI). Insurers can use these resources to access best practices by other institutional investors on climate-related investing.

> *"In an ongoing effort to ensure **Prudential** is current on best practices, Prudential is a participating member of the Investor Network on Climate Risk and has worked with that organization to benchmark its investment risk management processes for all asset classes."*

A small number of insurers have begun identifying climate-related investment opportunities, including renewable energy and energy efficiency. Among those is **Sun Life**:

> *"We believe that climate change regulation generally will create investment opportunities for us in energy efficiency and renewable energy… Sun Life is continuing to enhance its expertise in financing clean and renewable energy given the potential for growth and investment opportunities in this sector."*

CHAPTER 5

Health Insurers Survey Findings

5.1 CONTEXT AND OVERALL SCORES

"Climate change will, absent other changes, amplify some of the existing health threats the nation now faces. Certain people and communities are especially vulnerable, including children, the elderly, the sick, the poor, and some communities of color… Public health actions, especially preparedness and prevention, can do much to protect people from some of the impacts of climate change. Early action provides the largest health benefits."[76]

Third National Climate Assessment (NCA)

Despite facing significant business risks from climate change, the survey responses indicate that most health insurers are not prepared. A number of recent research reports have suggested that health insurers should consider climate-related risks far more comprehensively. Among those is the Intergovernmental Panel on Climate Change (IPCC) report, issued in March 2014, that warns of impaired human health due to catastrophic storm-related impacts, temperature extremes, decreased air quality, increased allergenic pollen production, and increased waterborne and vector-borne diseases.[75]

Reports such as the National Climate Assessment reinforce how health insurers need to take steps to protect policyholders from the worst impacts of climate change, while also protecting their bottom lines. It is also important for health insurers to align their commitment to human health with their investment portfolios. A climate-aware health insurer could, for example, review its investment portfolio and policies to ensure that its holdings in energy-intensive or extractive industries are not contributing to the extreme weather and air pollution that have been identified as major drivers of chronic diseases and increased mortality risks.[77]

Health insurers that take a proactive approach to climate-related health issues could serve as effective advocates for strong climate policies in their interactions with policymakers. A MIT study highlighted how health savings that accrue from enacting policies to reduce carbon emissions could, in some cases, outweigh the costs of implementing those policies by over one thousand percent.[78] Those savings could be largely captured by health insurers in the form of reduced health insurance costs. Health insurers' financial interests in mitigating the threat of climate change is clear, from both an underwriting and investment perspective. However, the survey results show that few, if any, health insurers are approaching climate risk in such a holistic manner.

This section examines health insurers' responses across a range of themes, including useful examples of climate risk mitigation. However, because the survey does not account for the unique climate risks faced by health insurers,[79] combined with the insurers' generally poor performance, this section is not as detailed as the P&C chapter.

75 Intergovernmental Panel on Climate Change (IPCC). *IPCC Fifth Assessment Report: Climate Change 2014*, "Observed impacts, vulnerabilities, and trends," 26.6.1, 2014, 26-28, http://ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap26_FGDall.pdf

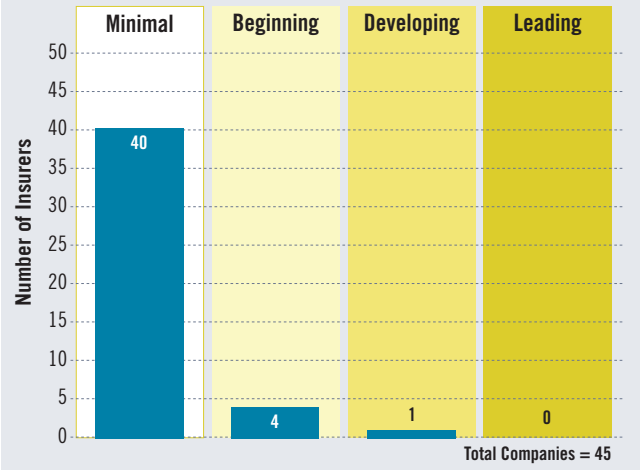
76 US Global Change Research Program, *Climate Change Impacts in the United States: Third National Climate Assessment*, 9, 221, http://www.globalchange.gov/ncadac.

77 Umair Irfan, "Air Pollution and Extreme Weather Combine to Kill," *Scientific American*, September 3, 2014. http://www.scientificamerican.com/article/air-pollution-and-extreme-weather-combine-to-kill/.

78 T. M. Thompson, S. Rausch, R. K. Saari, and N. E. Selin. "A Systems Approach to Evaluating the Air Quality Co-Benefits of U.S. Carbon Policies." *Nature Climate Change*, http://www.nature.com/nclimate/journal/v4/n10/full/nclimate2342.html.

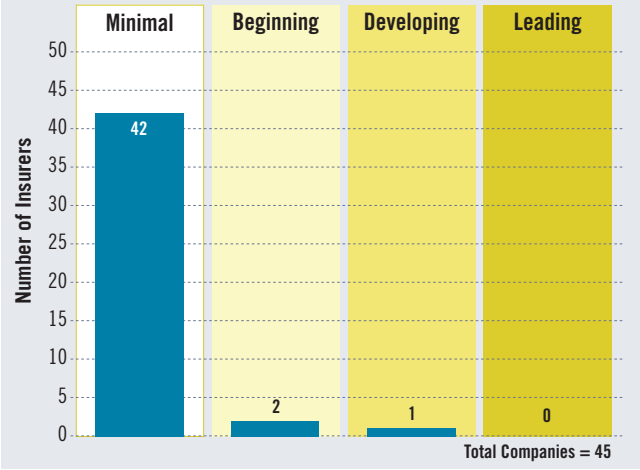
79 See Chapter 6, Key Recommendations for Insurance Regulators, for more information on the challenges with the survey.

FIGURE 5.1: HEALTH INSURERS OVERALL RATINGS



As Figure 5.1 shows, participating health insurers did not score well overall—none of the companies earned the top rating, and 89 percent of the 45 companies earned the bottom rating. Nonetheless, there were some areas of relative insurer strength, as the report highlights below.

FIGURE 5.2: HEALTH INSURERS CLIMATE RISK GOVERNANCE BY RATING



5.2 CLIMATE RISK GOVERNANCE

The Climate Risk Governance theme assesses insurer programs and policies for evaluating and elevating climate risk at the senior management and board levels. Health insurers fared quite poorly on this topic, with no insurers earning the top rating, one insurer earning the second rating, and 42 out of 45 insurers—93 percent—earning the bottom rating. (See Figure 5.2) None of the insurers had a comprehensive response on climate risk governance. None indicated a formalized process for identifying, evaluating and integrating new climate science data that could inform their climate risk assessments.

5.3 CLIMATE RISK AND INVESTMENTS

Generally, health insurers do not understand how climate risks may impact their investment portfolios. One notable exception is the **Torchmark Group**, which earned the top rating for its consideration of climate risk in investment management:

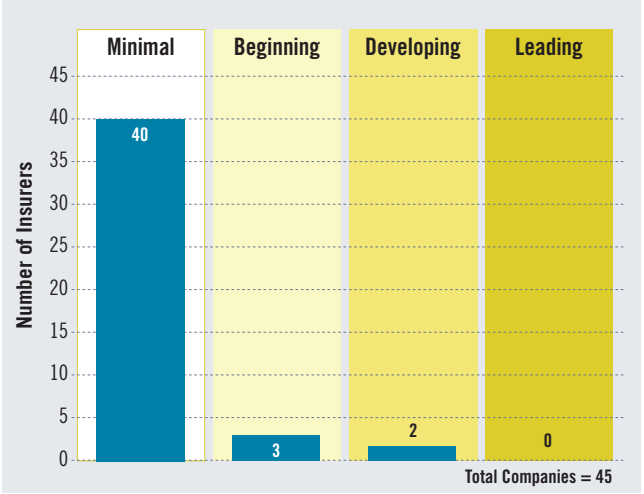
> *"In response to the potential for major catastrophe losses, the company has not purchased investments such as Florida Windstorm bonds, Oil Casualty bonds, etc. The company continuously monitors conditions in all sectors that are, or could be, impacted by future climate developments. Underwriting for industries such as coal generation electric utilities has materially changed in the recent past. A significant amount of extra time is now required for these types of underwritings in order to fully analyze the impact on an investment resulting from compliance with existing and potential new climate rules, regulations and laws."*

By combining a realistic assessment of likely future catastrophe losses that could affect asset prices, as well as the shifting regulatory environment surrounding carbon intensive industries, Torchmark is performing adequate investment due diligence on behalf of its shareholders.

5.4 SUPPORTING RESEARCH AND PUBLIC AWARENESS

As Figure 5.3 portrays, health insurers scored poorly on their climate risk outreach to policyholders and the public, as well as their support of outside research regarding climate change.

FIGURE 5.3: HEALTH INSURERS STAKEHOLDER ENGAGEMENT BY RATING



Indeed, with no insurers earning the top rating, 89 percent earning the fourth rating, and another nine percent earning the third rating, health insurers appear to lack climate risk engagement with key stakeholders and the public at large.

Kaiser Foundation Group was a strong exception:

> *"KP has supported improved research and risk analysis on the impact of climate change through the KP Research Program on Genes, Environment, and Health (RPGEH), which was launched in 2005… The databank created through the RPGEH will enable KP investigators and collaborating scientists to conduct research to understand genetic and environmental influences—including weather and climate influences—on disease susceptibility, the course of disease, and response to treatment; as well as to translate these findings into improvements in medical care and public health."*

Kaiser's RPGEH program is an example of how insurers can leverage policyholder data to advance research around how environmental factors and climate change affect public health. With access to large sets of detailed claims data, health insurers are uniquely positioned to advance research around climate change impacts on public health in partnership with academics or other outside researchers. Such research could aid health insurers to effectively price climate risks in their underwriting, and in engaging with policyholders around how to mitigate the health risks from a warmer future climate. This research could in turn aid insurers and health providers in better understanding effective climate-influenced disease prevention and treatment methods, thus bolstering insurers' bottom lines.

CHAPTER 6

Recommendations

Based on our analysis of 1,064 insurer Surveys, which Ceres grouped into 330 unique company level responses, the following represent our recommendations for how the insurance industry and regulators could better respond to the profound and wide-ranging climate risks the sector is facing. There are five separate sections below, with recommendations for all insurers, specific recommendations for each insurance segment, and recommendations for insurance regulators.

6.1 RECOMMENDATIONS FOR ALL U.S. INSURERS

- **Implement Climate Risk Oversight at the Board and C-Suite Levels**
  Addressing the long-term and far-reaching risks and opportunities of climate change requires a concerted effort by insurance company leadership, particularly at the senior executive and board levels. Insurance company leadership will need to assess and align company policies with the escalating risks that a warming climate poses. A comprehensive approach should include integrating climate risk assessment and management into all areas of company operations, and holding senior management accountable for achievement of those goals. Forward-looking insurance leaders should empower their teams to address climate risks and opportunities across the insurer value chain on a frequent and ongoing basis. Additionally, cross-functional climate-focused committees, comprised of diverse staff from all business units, should be charged with providing timely climate risk information and recommendations to senior management and their boards so that effective company responses may be developed.
- **Issue a Comprehensive and Public Corporate Policy on Climate Risk**
  As risk carriers, risk managers and major investors, every insurer should develop and issue a public climate risk management policy for the benefit of their shareholders, policyholders and employees. Such statements should, at a minimum, articulate the company's understanding of the latest climate science, GHG reduction goals, consideration of climate risk in underwriting and investment management, and public engagement on climate issues through policy and academic avenues. By making public statements regarding climate change, insurers can create platforms for deeper and more meaningful engagement, both internally and with key external stakeholders.
- **Integrate Climate Risk into ERM Frameworks**
  Climate-related physical impacts and the expanding use of carbon regulations affect the entire insurance company value chain: products and services, pricing, underwriting, risk management, account management, claims handling and investment management. Insurers need to accurately account for climate risks in their ERM assessment methodologies. Integrating climate change as a key ongoing risk within company ERM frameworks will help insurers catalyze effective responses across the enterprise. Clearly, 'business as usual' approaches are no longer sufficient given accelerating climate risks.

- **Deepen Understanding of Climate Change Scenarios and Impacts**
  All insurers should seek to understand, as a matter of prudent business practice, future risks and opportunities that climate change (including evolving regulatory frameworks to reduce carbon emissions) presents to their businesses. Apart from catastrophe modeling, which has remained primarily a property/casualty risk management tool, the proliferation of large-scale climate scenario projection software, combined with insurer underwriting data, will aid in developing loss scenarios that directly influence insurer product offerings and pricing. All insurers, including life & annuity and health insurers, should seek out such modeling products, and when none are available, work with leading climate and public health experts to develop appropriate tools for risk management purposes.
- **Engage with Key Stakeholders on Climate Risk**
  Insurers that have addressed the recommendations above should be sharing their perspectives with key stakeholders: policyholders, regulators, investors, brokers/agents and policymakers. Such efforts should include advocating for climate research and investments in resilient public infrastructure, educating policyholders on how they can mitigate climate risks in their homes and businesses, and promoting climate-aware insurance products, whether green replacement policies or policies that insure clean energy projects, among others. Insurers should also engage with brokers and agents that sell their products, educating them on the basics of climate science and their climate risk management approaches, as well as informing them of climate-aware products and incentives they are offering to sell them. Finally, insurers should work with regulators to find an equitable and transparent method for integrating climate change-informed pricing models and underwriting.
- **Provide Comprehensive Climate Risk Disclosure to Regulators**
  This report's scoring framework is dependent on the quality of insurers' climate disclosures. Insurers that provide detailed insights into their climate risk management practices provided more opportunity for evaluators to accurately assess their performance. While some insurers provide more detailed disclosure reports through CDP (formerly the Carbon Disclosure Project) or in their own corporate social responsibility reporting, most are still submitting incomplete climate risk disclosures to regulators. In the interests of transparency and supporting evaluations of the industry's overall responses to their climate risk, insurers should make every effort to provide comprehensive information in regulatory filings.
- **Participate in Joint Industry Initiatives on Climate Risk**
  Insurers seeking to take further action to mitigate climate risks have wide ranging resources available to them. In May 2014, 66 global re/insurers (including U.S.-based insurers AIG, Berkshire Hathaway, and Prudential) signed the Geneva Association's *Climate Risk Statement*,[80] a call for stronger actions, in concert with policymakers, on global climate risks. Insurers can join any number of climate-focused groups, including Ceres' Investor Network on Climate Risk (INCR), the United Nations Environment Program Finance Initiative's Principles for Sustainable Insurance (UNEP FI PSI), ClimateWise facilitated by the University of Cambridge Institute for Sustainability Leadership, or a range of other domestic and international groups.

80 The Geneva Association Climate Risk Statement press release, including the complete list of signers, is available at the following link: https://www.genevaassociation.org/media/878689/pr14-06-climate-risk-statement.pdf.

6.2 KEY RECOMMENDATIONS FOR PROPERTY & CASUALTY INSURERS

- **Integrate Climate Change Considerations Into Catastrophe Models**
  As the end-users of catastrophe model software, P&C insurers should ensure that the latest climate science and projected climate impacts are being taken into account and modeled appropriately by their vendors. Accurately communicating the risks associated with climate change through pricing and underwriting is essential, and accurate catastrophe modeling is crucial in this regard.
- **Consider Correlated Climate Risks in Investments**
  Most P&C insurers did not indicate that they take correlated risks between their underwriting and investments into account in a formal manner, particularly in considering the impacts of climate change on both sides of the balance sheet. While some insurers reported that they have limited or eliminated coverage in certain geographic regions, especially coastal regions, most insurers did not indicate consideration of climate-related asset value erosion in their evaluation of real estate and municipal bond investments. Over time, these could introduce material solvency risks to insurers in the event of a major catastrophe that drives higher losses and reduces investment returns in multiple geographic regions.

6.3 KEY RECOMMENDATIONS FOR HEALTH INSURERS

- **Assess the Likely Future Health Impacts of Climate Change**
  Most health insurers showed a lack of understanding of the various ways climate change could impact their businesses, and even more disturbing, frequently disregarded the materiality of climate risk to the health of their members. Insurers will better protect their policyholders as well as their investors by continuously assessing and integrating the latest research findings regarding climate-related health impacts.
- **Communicate Climate-Related Health Impacts Externally**
  Just as the insurance industry advocated for warnings on the use of tobacco products, insurers will benefit themselves and society at large by educating their customers on the health impacts of climate change, from food system impacts to more extreme weather events such as prolonged heat waves. By playing a leading role in helping society understand that climate change has serious health implications, the industry will enable individuals and policymakers to better recognize what is at stake.

6.4 KEY RECOMMENDATIONS FOR LIFE & ANNUITY INSURERS

- **Evaluate Climate Risks and Opportunities in Investment Portfolios**
  As major institutional investors with trillions of dollars under management, L&A insurers are significantly exposed to climate risks (both related to climatic impacts and carbon risks) in their investments, and as such ought to develop a process for assessing portfolio risks. There is a growing body of research on carbon asset risks,[81] i.e. the risk embedded in fossil fuel-based investments due to escalating carbon regulations and projected drops in global fossil fuel demand worldwide. L&A insurers will need to understand and account for these exposures in assessing their investment portfolios. On the opportunity side, as the green bonds market rapidly matures and expands, this asset class offers L&A insurers a great option to diversify their portfolios by making climate friendly investments.

81 Carbon Tracker Initiative. *Unburnable Carbon 2013: Wasted capital and stranded assets*, http://www.carbontracker.org/site/wastedcapital

6.5 KEY RECOMMENDATIONS FOR REGULATORS

- **Require Climate Risk Disclosure In All States**
  Insurance regulators in five states required participation in the 2014 Climate Risk Disclosure Survey, with the survey results covering about 87 percent of the domestic insurance market by direct premiums written. Ultimately all state insurance regulators should require insurers to file Survey responses in order to gain a complete assessment of each insurer's climate risk strategies. Regulators should also use the data gained from the Survey responses to more fully engage with insurers regarding their climate risk management strategies.
- **Release an Improved Climate Risk Disclosure Survey**
  While the Survey is a useful document for eliciting insurer responses, it could nonetheless be improved in terms of its clarity, comprehensiveness and fairness. For example, the current Survey does not take into account the unique climate risks and opportunities for non-P&C insurers, and the questions themselves are oriented mostly towards P&C concerns. More nuanced Survey questions oriented towards L&A and health insurers could help improve the industry's overall thinking and responses to wide ranging climate risks and opportunities.
- **Advocate for Quantitative Evaluation of Insurers' Climate Risk Management**
  Regulators should work more closely with ratings agencies, especially insurance-focused A.M. Best, to develop formal evaluative measures of insurers' climate risk management programs. Standard & Poor's has been evaluating insurers' ERM frameworks[82] for many years, yet their evaluative framework does not include specific criteria on how crosscutting climate risks are integrated into these frameworks. As climate risk represents a significant threat to insurers' core businesses, regulators should advocate for ratings agencies to address this gap in their insurer ratings processes.
- **Provide Insurers with Comprehensive Climate Science Resources**
  The responses from all three segments of insurers frequently showed that insurers were either uninformed or dismissive of climate risks to their businesses. While regulators need not attempt to "convince" unwilling insurers of the realities of climate change, creating a database of insurance-relevant and peer-reviewed climate science research would provide a useful, scientific basis for further industry action to address climate risks. Such efforts could include the NAIC (or other industry bodies) convening a panel of insurance and climate science experts to curate a range of suggested climate science resources for the industry to draw from in a non-ideological, non-partisan manner.

82 The most recent ERM-related commentary release from S&P is located here: http://www.standardandpoors.com/ratings/articles/en/us/?articleType=PDF&assetID=1245351301034

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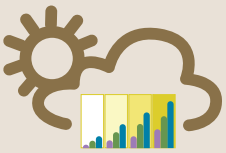


APPENDIX A

Insurance Company Scorecards

SEGMENT: PROPERTY & CASUALTY LARGE COMPANIES ($5 BILLION & ABOVE DPW)							
	Rating Theme						
Insurance Company	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
ACE Ltd. Group	■■■■	■■■□	■■■■	■■■■	■■■■	■■■■	■■■■
Allianz Insurance Companies	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Allstate Insurance Group	■■■■	■■■□	■■■□	■■□□	■■■■	■■■■	■■■□
American Family	■■■□	■■■□	■■■■	■■□□	■■■■	■■■■	■■■□
American International Group, Inc.	■■■■	■■■□	■■■□	■■■■	■■■■	■■■■	■■■□
Auto-Owners Insurance Group	■□□□	■□□□	■□□□	■■□□	■■□□	■□□□	■□□□
Berkshire Hathaway Group	■■□□	■■□□	■■■□	■■■□	■■■□	■■■□	■■■□
Chubb Group of Insurance Companies	■□□□	■■□□	■■□□	■■□□	■■■□	■■■□	■■□□
CNA	■■■□	■■■□	■■■□	■■■□	■■□□	■■■□	■■■□
Farmers Insurance Group of Companies	■■■□	■■■□	■■■■	■■■□	■■■□	■■■■	■■■□
Hartford Fire and Casualty	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Liberty Mutual Group	■■■□	■■■□	■■■■	■■□□	■■■□	■■■■	■■■□
Munich Re Group	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Nationwide Insurance	■□□□	■■■■	■■■■	■■■□	■■■■	■■■□	■■■□
Progressive Insurance Group	■■□□	■■■□	■■■■	■□□□	■■■□	■■■□	■■□□
QBE Insurance Group	■■□□	■□□□	■■■□	■■□□	■■□□	■■□□	■■□□
State Farm Companies	■□□□	■■□□	■■■□	■■□□	■■■■	■■□□	■■□□
Swiss Re Group	■■■□	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
The Travelers Companies, Inc.	■■□□	■■■□	■■□□	■■■■	■■■■	■■■□	■■■□
USAA Property & Casualty Insurance Companies	■□□□	■■□□	■■■□	■□□□	■■■□	■■□□	■■□□
Zurich US Insurance Pool Group	■■■□	■■■■	■■■■	■■■■	■■■■	■■■■	■■■■
Average Segment Score	■■■□	■■■□	■■■□	■■■□	■■■□	■■■□	■■■□

■■■■ = Leading ■■■□ = Developing ■■□□ = Beginning ■□□□ = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: PROPERTY & CASUALTY MEDIUM COMPANIES ($1 BILLION TO $5 BILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
Alterra America Insurance Company							
American National Group							
Amica Mutual Insurance Company							
AmTrust Financial Services, Inc.							
Arch Insurance Group							
Assurant, Inc.							
Auto Club Enterprises Group							
Auto Club Insurance Association & Affiliates							
Country Financial							
CSAA Insurance Group							
CUNA Mutual Group							
EMC Insurance Companies							
Erie Insurance Group							
Fairfax Financial Group							
Federated Mutual Group							
FM Global Group							
Great American Insurance Group							
HCC Insurance Holdings, Inc.							
Infinity Auto Insurance Company							
Kemper Corporation							
Main Street America Group							
Mercury Insurance Group							
MetLife, Inc.							
National General Holdings Corporation							
New Jersey Manufacturers Insurance Company							
Old Republic							
Selective Insurance							
Starr International Group							
State Auto Group							
The Cincinnati Insurance Companies							
The Commerce Insurance Group							
The Hanover Insurance Group							
The Sentry Insurance Group							
Tokio Marine Group							
Tokio Marine Holdings, Inc.							
Tower Group							
W. R. Berkley Corporation							
Westfield Insurance Company							
White Mountains Insurance Group							
XL Group plc							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: PROPERTY & CASUALTY SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
Acuity Mutual Group							
Alfa Mutual Insurance Company							
Allied World Assurance Holdings Group							
Ally Insurance							
American Agri-Business Insurance Company							
American Interstate Insurance Company							
Arbella Insurance Group							
Argo Group US, Inc.							
ARX Holding Corp							
Aspen Insurance							
AXIS Insurance Company							
Berkshire Hathaway Inc.							
Blue Cross Group							
California Casualty Indemnity Exchange & Affiliated Insurers							
California Earthquake Authority							
Capital Insurance Group							
Caterpillar Insurance Company							
Catlin Inc.							
Central Insurance Companies							
Church Mutual Insurance Company							
Electric Insurance Company							
Employers Compensation Insurance Company							
Enumclaw Insurance Group							
Everest National Insurance Company							
Farmers Mutual Hail							
Frankenmuth Mutual Insurance Company							
Grinnell Mutual Group							
GuideOne Insurance Group							
Homesite Insurance Group							
Hudson Insurance Company							
IAT Group							
ICW Group							
IDS Property Casualty Insurance Company							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

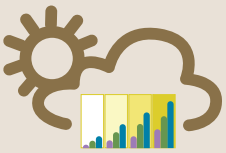
APPENDIX A

SEGMENT: PROPERTY & CASUALTY SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
John Deere Insurance Company							
Loya Insurance Group							
Medical Liability Mutual Insurance Company							
Merrimack Mutual Fire Insurance Company & Affiliated Insurers							
Mitsui Sumitomo							
NYCM Insurance Group							
PEMCO Mutual Insurance Company							
Pennsylvania National Mutual Casualty Insurance Co.							
Physicians' Reciprocal Insurers							
Plymouth Rock Group							
ProAssurance Group							
ProSelect Insurance Company							
Radian Group Inc.							
Republic Companies, Inc.							
RLI Group							
RSUI Indemnity							
SECURA Insurance							
Star Insurance Company							
State Compensation Insurance Fund							
State National Companies							
The Doctors Company							
The Navigators Group, Inc.							
The Warranty Group							
The Wright Insurance Group							
United Fire Group							
Universal North America Insurance Company							
Utica National Insurance Group							
Vermont Mutual Insurance Company							
Wawanesa General Insurance Company							
West Bend Mutual Insurance Company							
Zenith Insurance Company							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)



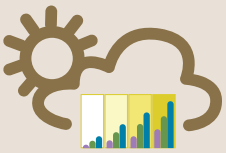
APPENDIX A

SEGMENT: PROPERTY & CASUALTY VERY SMALL COMPANIES (UNDER $300 MILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
ACCC Insurance Company							
Access General Insurance Company							
Alaska National Insurance Company							
Alliance United Insurance Company							
American Transit Insurance Company							
AMEX Assurance Company							
Atlantic States Insurance Company							
Beazley Insurance Company, Inc.							
Brotherhood Mutual Insurance Co.							
Canal Insurance Group							
Century-National Insurance Company							
Columbia Mutual Insurance Company							
Country-Wide Insurance Company							
Courtesy Insurance Company							
Dealers Assurance Company							
Dorinco Reinsurance Company							
Farmers Alliance Mutual Insurance Co. & Subsidiaries							
Federated Rural Electric Insurance Exchange							
First Financial Insurance Company & Affiliates							
General Security Indemnity Company of Arizona							
GeoVera Holdings, Inc.							
Grange Insurance Group							
Greater New York Insurance Companies							
Guarantee Insurance Company							
Hospitals Insurance Company, Inc.							
Ironshore Indemnity Inc.							
Jewelers Mutual Insurance Company							
Lancer Insurance Group							
Maine Employers' Mutual Insurance Gp.							
Merchants Mutual Insurance Company							
MGA Insurance Company, Inc.							
Michigan Millers Mutual							
MMG Insurance Company							
MMIC Insurance, Inc.							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)



APPENDIX A

SEGMENT: PROPERTY & CASUALTY VERY SMALL COMPANIES (UNDAR $300 MILLION DPW)							
Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
Narragansett Bay Insuance Company							
National American Insurance Company							
New York Marine and General Insurance Company							
Nodak Mutual Group							
NORCAL Mutual Insurance Company							
Norfolk & Dedham Group							
North Star Companies Group							
Ocean Harbor							
Ohio Mutual Insurance Group							
Oregon Mutual Insurance Company							
Pacific Specialty Insurance Company							
Pennsylvania Lumbermens Mutual Insurance Company							
Permanent General Assurance Corporation							
Pharmacists Mutual Insurance Company							
Preferred Mutual Insurance Company							
Preferred Professional Insurance Company							
Privilege Underwriters Reciprocal Exchange							
Protective Insurance							
Public Service Group							
Quincy Mutual Group							
Rural Mutual Insurance Company							
Safe Auto Insurance Company							
Safeway Insurance Company & Its Affiliated Insurers							
SeaBright Insurance Company							
SFM Mutual							
Sompo Japan Insurance Group							
Talanx Group							
The American Club							
The American Road Insurance Company							
Trustgard Insurance Company							
Van Enterprises							
Western World Insurance Group							
Wilson Mutual Insurance Company							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: LIFE & ANNUITY LARGE COMPANIES ($5 BILLION AND ABOVE DPW)							
Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
Aviva USA							
AXA Group							
Genworth Financial							
Great-West Group							
ING U. S., Inc							
Jackson National Group							
John Hancock Group							
Lincoln Financial Group							
MassMutual Financial Group							
Minnesota Life Insurance Company							
New York Life							
Northwestern Mutual Group							
Pacific Life Insurance Company							
Principle Financial Group							
Protective Life Corporation							
River Source Life Insurance Company							
Sammons Financial Group							
The Guardian Life Insurance Company of America							
The Prudential Group							
The TIAA Family of Companies							
Transamerica Life Insurance Company							
Unum							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: LIFE & ANNUITY MEDIUM COMPANIES ($1 BILLION TO $5 BILLION DPW)							
Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
American Equity Investment Life Insurance Company							
Ameritas Holding Company							
CNO Financial Group							
Delphi Financial Group							
Empire Fidelity Life Insurance Company							
Fidelity & Guaranty Life Insurance Company							
Forethought Life Insurance Company							
Guggenheim Insurance							
Mutual of America Life Insurance Company							
Mutual of Omaha Companies							
National Life Group							
National Western Life Insurance Company							
OneAmerica Companies							
Penn Mutual Life Group							
Primerica Group							
Security Benefit Life Insurance Company							
Standard Insurance Company							
Sun Life Financial Group							
Symetra Life Insurance Company							
The Ohio National Life Insurance Company							
The Phoenix Companies, Inc.							
Western & Southern Financial Group							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: LIFE & ANNUITY SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
AAA Life Insurance Company							
Aflac Group							
American Family Life Insurance Company							
Americo Financial Life & Annuity Insurance Company							
Athene Annuity & Life Assurance Company							
Companion Life Insurance Company							
ELCO Mutual Life and Annuity							
Farm Bureau Life Insurance Company							
Gerber Life Insurance Company							
Homesteaders Life Company							
IHC Group							
Jefferson National Life Insurance Company							
Kansas City Life							
Kemper Corporation							
Legal and General America							
Lincoln Heritage Life Insurance Company							
NGL Insurance Group							
Pan-American Life Insurance Group							
Pekin Life Insurance Group							
Security Mutual Life Insurance Company of New York							
Sentinel Security Life Insurance Company							
The Savings Bank Life Insurance Co. of Massachusetts							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: LIFE & ANNUITY VERY SMALL COMPANIES (UNDER $300 MILLION DPW)							
Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
5 Star Life Insurance Company							
Assurity Life Insurance Company							
BCS Financial Corporation							
Boston Mutual Life Insurance Company							
Central States Health & Life Company of Omaha							
CICA Life Insurance Company							
Citigroup, Inc.							
Columbian Life Insurance Company							
Commonwealth Annuity & Life Insurance Company							
Consumers Life Insurance Company							
Equitable Life & Casualty Insurance Company							
Fidelity Life Association							
First Investors Life							
Funeral Directors Life Insurance Company							
Great Western Insurance Company							
Heritage Guaranty							
Illinois Mutual Life Insurance Company							
Indiana Farm Bureau Insurance							
MTL Insurance Company							
New Era Life Group							
Sagicor Life Insurance Company							
Texas Life Insurance Company							
The Baltimore Life Insurance Company							
Ullico Inc.							
Universal American							
USAble Life							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: HEALTH LARGE COMPANIES ($5 BILLION & ABOVE DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
Aetna							
Cigna Health Group							
Excellus Health Plan, Inc.							
HIP Insurance Group							
Kaiser Foundation Group							
The Regence Group							
WellCare Prescription Insurance, Inc.							
Average Segment Score							

SEGMENT: HEALTH MEDIUM COMPANIES ($1 BILLION TO $5 BILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
BCBSM Inc.							
Blue Shield of California Life & Health insurance Co.							
Group Health Cooperative							
HealthMarkets Inc.							
HealthNow New York, Inc.							
HealthPartners Group							
Independent Health Benefit Corporation							
Medica							
MVP Health Care							
Noridian Mutual Insurance Company							
Premera Blue Cross							
Providence Health Plans							
Torchmark Corporation							
Vision Service Plan Insurance Company							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX A

SEGMENT: HEALTH SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
American Family Life Assurance Company of Columbus							
American Fidelity Assurance Company							
American Republic Insurance Company							
CDPHP							
Envision Insurance Company							
Fidelity Security Life Insurance Company							
HCSC Group							
Health Net, Inc.							
Humana							
PacificSource Health Plans							
Trustmark Companies							
UnitedHealth Group, Inc.							
Washington Dental Service							
WellPoint, Inc.							
Average Segment Score							

SEGMENT: HEALTH VERY SMALL COMPANIES (UNDER $300 MILLION DPW)

Insurance Company	Rating Theme						
	Climate Risk Governance	Enterprisewide Climate Risk Management	Climate Modeling & Analytics	Stakeholder Engagement	Internal Greenhouse Gas Management	Climate Risk Disclosure & Reporting	Overall Score
Celtic Insurance Company							
Delta Dental of New York, Inc.							
Health Ventures Network							
Highmark Health Services							
Nippon Life Insurance Company of America							
Oregon Dental Group							
Physicians Mutual							
PreferredOne							
Tufts Insurance Company							
Average Segment Score							

= Leading = Developing = Beginning = Minimal

Note: Company size is based on 2012 direct premiums written (DPW)

APPENDIX B

Climate Risk Survey Guidance for Reporting Year 2012[1]

August 2013

Discussion

This document offers guidance to insurers responding to the annual mandatory Insurer Climate Risk Disclosure Survey (hereafter referred to as the "Survey"). Those questions contained in this guidance document which are not part of the official set of Survey questions are intended only to guide respondents as they craft their responses to the Survey and are not compulsory.

Guidance Notes

Survey Application and Instructions

i. **Response Submissions** Mandatory disclosure will depend on the premium amounts reported for the most immediate prior financial reporting year. If an insurer reports over **$100,000,000** for **2012**, it must complete the survey and submit it on or before **August 30, 2013**. However, if an insurer reports less than that, it will not be required to complete and file the survey, but it may do so voluntarily.

ii. **Quantitative and Forward-Looking Information** Insurers are not required to submit quantitative information but may do so without implying materiality. Insurers are encouraged to provide quantitative information where it offers additional clarity on trends in the intensity or attenuation of natural hazards, insured losses, investment portfolio composition, policyholder risk reduction or improvements in computer modeling. As climate science improves (i.e., when there is greater agreement between observed data and models or when there is integration of catastrophe and climate models), insurers should be able to provide quantitative information with less uncertainty. Insurers are encouraged but not required to provide forward-looking information that will indicate the risks and opportunities insurers may face in the future; when provided, insurers may disclaim any responsibility for the accuracy of such forward-looking information. Forward-looking information is assumed to have some degree of uncertainty; if provided, insurers should offer explanation on the degree and sources of uncertainty as well as assumptions employed.

iii **Response Required** Insurers in all segments of the industry are required to respond to all eight questions. An insurer may state that a question is not relevant to its business practice, operations or investments. However, if it does so, it must also explain why the question is not relevant.

Survey Questions

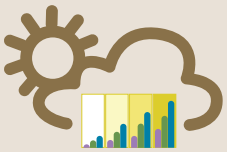
Question One: Does the company have a plan to assess, reduce or mitigate its emissions in its operations or organizations?

Yes—The company has a plan to assess and reduce or mitigate emissions in our operations or organizations—Please summarize.

No—The company does not have a plan to assess and reduce or mitigate emissions in our operations or organizations—Please describe why not.

Insurers who are unfamiliar with frameworks for greenhouse gas emission measurement and management are encouraged to review the principles of "The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)" developed by the World Resources Institute and the World Business Council for Sustainable Development ("the GHG Protocol").

1 The reporting year 2012 version of this document can be found at: New York State Department of Financial Services, "2012 Insurer Climate Risk Disclosure Survey." http://www.dfs.ny.gov/insurance/insurers/climate_survey_2012_guidelines_survey_questions.pdf



APPENDIX B

Each insurer is encouraged to clarify whether its plan for measuring and management of its emissions in operations and/or its subsidiary organizations' operations includes emissions related to energy use for data storage or other computing-intensive processes.1

Question Two: Does the company have a climate change policy with respect to risk management and investment management? If yes, please summarize. If no, how do you account for climate change in your risk management?

Yes—The company has a climate change policy with respect to risk management and investment management—Please summarize.

No—The company does not have a climate change policy with respect to risk management and investment management—Please describe how you account for climate change in your risk management, or why you do not account for climate change in your risk management.

Questions to consider include:

- Where in the structure of the company is climate risk addressed?
- Does the company approach climate change as an Enterprise Risk Management (ERM) issue?
- Does the company have a dedicated point-person or team within the company that is responsible for managing its climate change strategy?
- What is the role of the board of directors in governing climate risk management?
- Does the company consider potentially correlated risks affecting asset management and underwriting?
- Has the company issued a public statement on its climate policy?

Question Three: Describe your company's process for identifying climate change-related risks and assessing the degree that they could affect your business, including financial implications.

Yes—The company has a process for identifying climate change-related risks and assessing the degree that it could affect our business including financial implications—Please summarize.

No—The company does not have a process for identifying climate change-related risks and assessing the degree that it could affect our business including financial implications—Please describe why not.

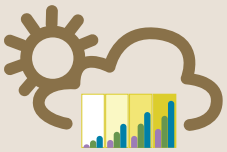
Questions to consider include:

- How may climate change shift customer demand for products?
- What implications may climate change have on liquidity and capital needs?
- How might climate change affect limits, cost and terms of catastrophe reinsurance, including reinstatement provisions?
- Has the insurer considered creative methods of risk distribution such as contingency plans to reduce financial leverage and resolve any liquidity issues in the event of a sudden loss in surplus and cash outflows as a result of a catastrophic event?
- How are these impacts likely to evolve over time? Does the company have plans to regularly reassess climate change related risks and its responses to those risks?

Question Four: Summarize the current or anticipated risks that climate change poses to your company. Explain the ways that these risks could affect your business. Include identification of the geographical areas affected by these risks.

Yes—The company has identified current or anticipated risks that climate change poses to our company—Explain the ways that these risks could affect your business - Include identification of the geographical areas affected by these risks.

No—The company has not identified current or anticipated risks that climate change will pose to our company—Please describe why not.



Questions to consider include:

- Which business segments or products are most exposed to climate-related risks?
- Has the company considered its potential exposure to climate liability through its D&O or CGL policies?
- Are there geographic locations, perils or coverages for which the company has increased rates, limited sales, or limited or eliminated coverages because of catastrophic events? How do those actions relate to assessments of climate change impacts made by the company?
- Has the company examined the geographic spread of property exposures relative to the expected impacts of climate change, including a review of the controls in place to assure that the insurer is adequately addressing its net exposure to catastrophic risk?

Question Five: Has the company considered the impact of climate change on its investment portfolio? Has it altered its investment strategy in response to these considerations? If so, please summarize steps you have taken.

Yes—The company has considered the impact of climate change on its investment portfolio—Please summarize.

No—The company has not considered the impact of climate change on its investment portfolio—Please describe why not.

Yes—The company has altered its investment strategy in response to these considerations—Please summarize steps you have taken.

No—The company has not altered its investment strategy in response to these considerations—Please describe why not.

Questions to consider include:

- Does the company consider regulatory, physical, litigation, and competitiveness-related climate risks, among others, when assessing investments?
- Has the company considered the implications of climate change for all of its investment classes, e.g. equities, fixed income, infrastructure, real estate?
- Does the insurer use a shadow price for carbon when considering investments in heavy emitting industries in markets where carbon is either currently regulated or is likely to be regulated in the future?
- Does the insurer factor the physical risks of climate change (water scarcity, extreme events, weather variability) into security analysis or portfolio construction? If so, for what asset classes and issuers (corporate, sovereign, municipal)?
- How does climate change rank compared to other risk drivers, given the insurer's asset liability matching strategy and investment duration?
- Does the insurer have a system in place to manage correlated climate risks between its underwriting and investments?

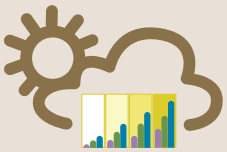
Question Six: Summarize steps the company has taken to encourage policyholders to reduce the losses caused by climate change-influenced events.

Yes—The company has taken steps to encourage policyholders to reduce the losses caused by climate change-influenced events—Please summarize.

No—The company has not taken steps to encourage policyholders to reduce the losses caused by climate change-influenced events—Please describe why not.

Questions to consider include:

- How has the company employed price incentives, new products or financial assistance to promote policyholder loss mitigation? In what lines have these efforts been attempted, and can the outcome of such efforts be quantified in terms of properties retrofitted, losses avoided, etc.?
- For insurers underwriting D&O, CGL and professional liability policies, what steps has the company taken to educate clients on climate liability risks or to screen potential policyholders based on climate liability risk? How does the company define climate risk for these lines?



APPENDIX B

Question Seven: Discuss steps, if any, the company has taken to engage key constituencies on the topic of climate change.

Yes—The company has taken steps to engage key constituencies on the topic of climate change—Please summarize.

No—The company has not taken steps to engage key constituencies on the topic of climate change—Please describe why not.

Questions to consider include:

- How has the company supported improved research and/or risk analysis on the impacts of climate change?
- What resources has it invested to improve climate awareness among its customers in regulated and unregulated lines?
- What steps has it taken to educate shareholders on potential climate change risks the company faces?

Question Eight: Describe actions the company is taking to manage the risks climate change poses to your business including, in general terms, the use of computer modeling.

Yes—The company is taking actions to manage the risks climate change poses to the business—Please summarize what actions the company is taking and in general terms the use if any of computer modeling.

No—The company is not taking actions to manage the risks climate change poses to the business—Please describe why.

Questions to consider include:

- For what perils does the company believe that future trends may deviate substantially from historical trends due to changes in the hazard? Similarly, for what perils, if any, does the company believe that a catastrophe model extrapolating observed trends would be insufficient to plan for maximum possible loss or yearly average loss? What steps has the company taken to model or analyze perils associated with non-stationary hazards?
- Has the company used catastrophe models to conduct hypothetical "stress tests" to determine the implications of a wide range of plausible climate change scenarios? If so, over what timescale, in what geographies and for what perils?
- Has the company conducted, commissioned or participated in scenario modeling for climate trends beyond the 1-5 year timescale? If so, what conclusions did the company reach on the potential implications for insurability under these scenarios?

APPENDIX C

Listing of Insurer Group Respondents to the 2014 Climate Risk Disclosure Survey

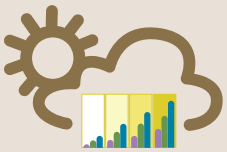
Property & Casualty Insurers

PROPERTY & CASUALTY LARGE COMPANIES ($5 BILLION & ABOVE DPW)		
ACE Ltd. Group	Chubb Group of Insurance Companies	Progressive Insurance Group
Allianz Insurance Companies	CNA	QBE Insurance Group
Allstate Insurance Group	Farmers Insurance Group of Companies	State Farm Companies
American Family	Hartford Fire and Casualty	Swiss Re Group
American International Group, Inc.	Liberty Mutual Group	The Travelers Companies, Inc.
Auto-Owners Insurance Group	Munich Re Group	USAA Property & Casualty Insurance Companies
Berkshire Hathaway Group	Nationwide Insurance	Zurich US Insurance Pool Group

PROPERTY & CASUALTY MEDIUM COMPANIES ($1 BILLION TO $5 BILLION DPW)		
Alterra America Insurance Company	Federated Mutual Group	State Auto Group
American National Group	FM Global Group	The Cincinnati Insurance Companies
Amica Mutual Insurance Company	Great American Insurance Group	The Commerce Insurance Group
AmTrust Financial Services, Inc.	HCC Insurance Holdings, Inc.	The Hanover Insurance Group
Arch Insurance Group	Infinity Auto Insurance Company	The Sentry Insurance Group
Assurant, Inc.	Kemper Corporation	Tokio Marine Group
Auto Club Enterprises Group	Main Street America Group	Tokio Marine Holdings, Inc.
Auto Club Insurance Association & Affiliates	Mercury Insurance Group	Tower Group
Country Financial	MetLife, Inc.	W. R. Berkley Corporation
CSAA Insurance Group	National General Holdings Corporation	Westfield Insurance Company
CUNA Mutual Group	New Jersey Manufacturers Insurance Company	White Mountains Insurance Group
EMC Insurance Companies	Old Republic	XL Group plc
Erie Insurance Group	Selective Insurance	
Fairfax Financial Group	Starr International Group	

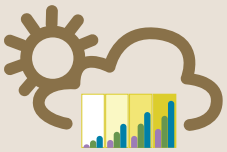
APPENDIX C

PROPERTY & CASUALTY SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)		
Acuity Mutual Group	Everest National Insurance Company	Republic Companies, Inc.
Alfa Mutual Insurance Company	Farmers Mutual Hail	RLI Group
Allied World Assurance Holdings Group	Frankenmuth Mutual Insurance Co.	RSUI Indemnity
Ally Insurance	Grinnell Mutual Group	SECURA Insurance
American Agri-Business Insurance Company	GuideOne Insurance Group	Star Insurance Company
American Interstate Insurance Company	Homesite Insurance Group	State Compensation Insurance Fund
Arbella Insurance Group	Hudson Insurance Company	State National Companies
Argo Group US, Inc.	IAT Group	The Doctors Company
ARX Holding Corp	ICW Group	The Navigators Group, Inc.
Aspen Insurance	IDS Property Casualty Insurance Co.	The Warranty Group
AXIS Insurance Company	John Deere Insurance Company	The Wright Insurance Group
Berkshire Hathaway Inc.	Loya Insurance Group	United Fire Group
Blue Cross Group	Medical Liability Mutual Insurance Co.	Universal North America Insurance Company
California Casualty Indemnity Exchange & Affiliated Insurers	Merrimack Mutual Fire Insurance Company & Affiliated Insurers	Utica National Insurance Group
California Earthquake Authority	Mitsui Sumitomo	Vermont Mutual Insurance Company
Capital Insurance Group	NYCM Insurance Group	Wawanesa General Insurance Company
Caterpillar Insurance Company	PEMCO Mutual Insurance Company	West Bend Mutual Insurance Company
Catlin Inc.	Pennsylvania National Mutual Casualty Insurance Co.	Zenith Insurance Company
Central Insurance Companies	Physicians' Reciprocal Insurers	
Church Mutual Insurance Company	Plymouth Rock Group	
Electric Insurance Company	ProAssurance Group	
Employers Compensation Insurance Company	ProSelect Insurance Company	
Enumclaw Insurance Group	Radian Group Inc.	



APPENDIX C

PROPERTY & CASUALTY VERY SMALL COMPANIES (UNDER $300 MILLION DPW)		
ACCC Insurance Company	Guarantee Insurance Company	Permanent General Assurance Corporation
Access General Insurance Company	Hospitals Insurance Company, Inc.	Pharmacists Mutual Insurance Company
Alaska National Insurance Company	Ironshore Indemnity Inc.	Preferred Mutual Insurance Company
Alliance United Insurance Company	Jewelers Mutual Insurance Company	Preferred Professional Insurance Company
American Transit Insurance Company	Lancer Insurance Group	Privilege Underwriters Reciprocal Exchange
AMEX Assurance Company	Maine Employers' Mutual Insurance Group	Protective Insurance
Atlantic States Insurance Company	Merchants Mutual Insurance Company	Public Service Group
Beazley Insurance Company, Inc.	MGA Insurance Company, Inc.	Quincy Mutual Group
Brotherhood Mutual Insurance Company	Michigan Millers Mutual	Rural Mutual Insurance Company
Canal Insurance Group	MMG Insurance Company	Safe Auto Insurance Company
Century-National Insurance Company	MMIC Insurance, Inc.	Safeway Insurance Company & Its Affiliated Insurers
Columbia Mutual Insurance Company	Narragansett Bay Insuance Company	SeaBright Insurance Company
Country-Wide Insurance Company	National American Insurance Company	SFM Mutual
Courtesy Insurance Company	New York Marine & General Insurance Company	Sompo Japan Insurance Group
Dealers Assurance Company	Nodak Mutual Group	Talanx Group
Dorinco Reinsurance Company	NORCAL Mutual Insurance Company	The American Club
Farmers Alliance Mutual Insurance Co. & Subsidiaries	Norfolk & Dedham Group	The American Road Insurance Company
Federated Rural Electric Insurance Exchange	North Star Companies Group	Trustgard Insurance Company
First Financial Insurance Company & Affiliates	Ocean Harbor	Van Enterprises
General Security Indemnity Company of Arizona	Ohio Mutual Insurance Group	Western World Insurance Group
GeoVera Holdings, Inc.	Oregon Mutual Insurance Company	Wilson Mutual Insurance Company
Grange Insurance Group	Pacific Specialty Insurance Company	
Greater New York Insurance Companies	Pennsylvania Lumbermens Mutual Insurance Company	



APPENDIX C

Life & Annuity Insurers

LIFE & ANNUITY LARGE COMPANIES ($5 BILLION AND ABOVE DPW)		
Aviva USA	MassMutual Financial Group	Sammons Financial Group
AXA Group	Minnesota Life Insurance Company	The Guardian Life Insurance Company of America
Genworth Financial	New York Life	The Prudential Group
Great-West Group	Northwestern Mutual Group	The TIAA Family of Companies
ING U. S., Inc	Pacific Life Insurance Company	Transamerica Life Insurance Company
Jackson National Group	Principle Financial Group	Unum
John Hancock Group	Protective Life Corporation	
Lincoln Financial Group	RiverSource Life Insurance Company	

LIFE & ANNUITY MEDIUM COMPANIES ($1 BILLION TO $5 BILLION DPW)		
American Equity Investment Life Insurance Company	Mutual of America Life Insurance Company	Standard Insurance Company
Ameritas Holding Company	Mutual of Omaha Companies	Sun Life Financial Group
CNO Financial Group	National Life Group	Symetra Life Insurance Company
Delphi Financial Group	National Western Life Insurance Company	The Ohio National Life Insurance Company
Empire Fidelity Life Insurance Company	OneAmerica Companies	The Phoenix Companies, Inc.
Fidelity & Guaranty Life Insurance Company	Penn Mutual Life Group	Western & Southern Financial Group
Forethought Life Insurance Company	Primerica Group	
Guggenheim Insurance	Security Benefit Life Insurance Company	

LIFE & ANNUITY SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)		
AAA Life Insurance Company	Gerber Life Insurance Company	NGL Insurance Group
Aflac Group	Homesteaders Life Company	Pan-American Life Insurance Group
American Family Life Insurance Company	IHC Group	Pekin Life Insurance Group
Americo Financial Life & Annuity Insurance Company	Jefferson National Life Insurance Company	Security Mutual Life Insurance Company of New York
Athene Annuity & Life Assurance Company	Kansas City Life	Sentinel Security Life Insurance Company
Companion Life Insurance Company	Kemper Corporation	The Savings Bank Life Insurance Co. of Massachusetts
ELCO Mutual Life and Annuity	Legal and General America	
Farm Bureau Life Insurance Company	Lincoln Heritage Life Insurance Company	

LIFE & ANNUITY VERY SMALL COMPANIES (UNDER $300 MILLION DPW)		
5 Star Life Insurance Company	Consumers Life Insurance Company	MTL Insurance Company
Assurity Life Insurance Company	Equitable Life & Casualty Insurance Company	New Era Life Group
BCS Financial Corporation	Fidelity Life Association	Sagicor Life Insurance Company
Boston Mutual Life Insurance Company	First Investors Life	Texas Life Insurance Company
Central States Health & Life Company of Omaha	Funeral Directors Life Insurance Company	The Baltimore Life Insurance Company
CICA Life Insurance Company	Great Western Insurance Company	Ullico Inc.
Citigroup, Inc.	Heritage Guaranty	Universal American
Columbian Life Insurance Company	Illinois Mutual Life Insurance Company	USAble Life
Commonwealth Annuity & Life Insurance Company	Indiana Farm Bureau Insurance	

APPENDIX C

Health Insurers

HEALTH LARGE COMPANIES ($5 BILLION & ABOVE DPW)		
Aetna	HIP Insurance Group	WellCare Prescription Insurance, Inc.
Cigna Health Group	Kaiser Foundation Group	
Excellus Health Plan, Inc.	The Regence Group	

HEALTH MEDIUM COMPANIES ($1 BILLION TO $5 BILLION DPW)		
BCBSM Inc.	HealthPartners Group	Premera Blue Cross
Blue Shield of California Life & Health insurance Co.	Independent Health Benefit Corporation	Providence Health Plans
Group Health Cooperative	Medica	Torchmark Corporation
HealthMarkets Inc.	MVP Health Care	Vision Service Plan Insurance Company
HealthNow New York, Inc.	Noridian Mutual Insurance Company	

HEALTH SMALL COMPANIES ($300 MILLION TO $1 BILLION DPW)		
American Family Life Assurance Co. of Columbus	Fidelity Security Life Insurance Company	Trustmark Companies
American Fidelity Assurance Company	HCSC Group	UnitedHealth Group, Inc.
American Republic Insurance Company	Health Net, Inc.	Washington Dental Service
CDPHP	Humana	WellPoint, Inc.
Envision Insurance Company	PacificSource Health Plans	

HEALTH VERY SMALL COMPANIES (UNDER $300 MILLION DPW)		
Celtic Insurance Company	Highmark Health Services	Physicians Mutual
Delta Dental of New York, Inc.	Nippon Life Insurance Company of America	PreferredOne
Health Ventures Network	Oregon Dental Group	Tufts Insurance Company

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