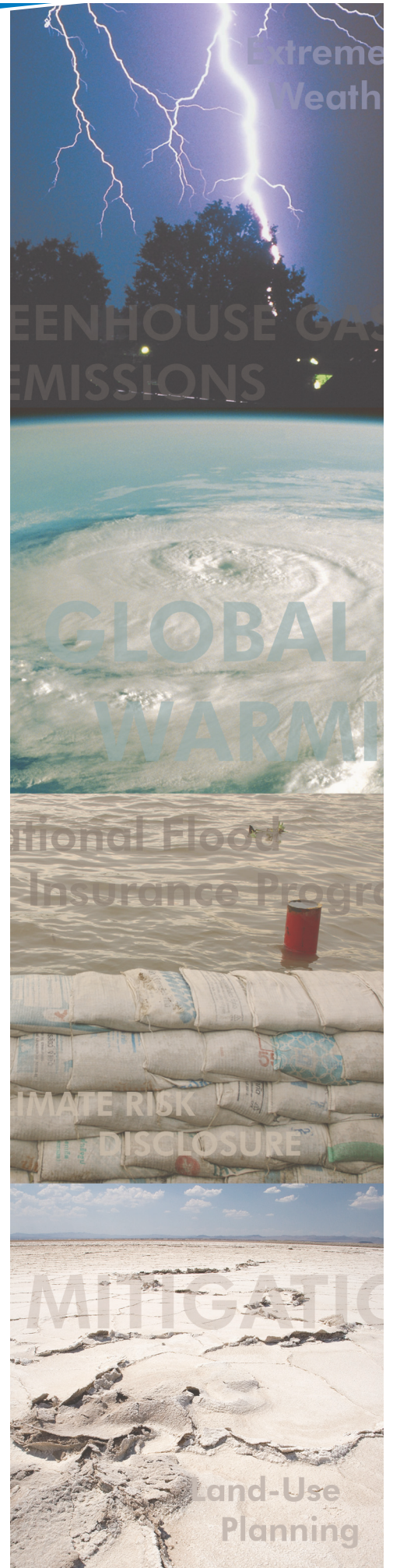


NAIC

National Association of Insurance Commissioners

The Potential Impact of Climate Change on Insurance Regulation





The Potential Impact of Climate Change on Insurance Regulation

2008



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Executive Headquarters
2301 McGee Street, Suite 800
Kansas City, MO 64108-2662
816.842.3600

NAIC Securities Valuation Office
48 Wall Street, 6th Floor
New York, NY 10005-2906
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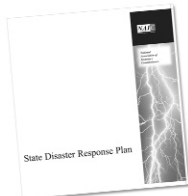
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The Potential Impact of Climate Change on Insurance Regulation

In Memory of Tim Wagner

During the drafting of this white paper the world was diminished by the passing of a great man. Nebraska Insurance Director L. Tim Wagner passed away on Oct. 9, 2007. Director Wagner was co-chair of the NAIC Climate Change and Global Warming (EX) Task Force at the time of his passing. He was passionate about global warming and was concerned that the insurance industry would be unprepared for all that climate change might bring. It is to our fond memories of this kind, gentle and insightful man that this white paper is dedicated.

INTRODUCTION

Global warming and the associated climate change represent a significant challenge for Americans. As regulators of one of the largest American industries, the insurance industry, it is essential that we assess and, to the extent possible, mitigate the impact global warming will have on insurance. As an initial step in the process, NAIC was involved with climate change since February 2005, when, at the annual commissioners' conference climate scientists and others presented information about climate change and global warming. The Property and Casualty Insurance (C) Committee hosted a public hearing in December 2005. The public hearing was for discussion of the implications of climate change on insurers and insurance consumers. Responding to the urgency for insurers and insurance consumers to evaluate the implications that climate change will have on the availability and affordability of insurance products, the NAIC created the Climate Change and Global Warming Task Force. It met for the first time at the NAIC 2006 Summer National Meeting. The Task Force is charged with, among other duties, the responsibility of drafting a white paper documenting the potential insurance related impacts of climate change on insurance consumers, insurers and insurance regulators. At its meeting in September 2006, the Task Force concluded that as significant work had already been done on the issues that climate change poses on insurance consumers and insurers, efforts should be concentrated on the issues faced by insurance regulators.

For the purposes of this paper, the Task Force assumes that global warming is occurring. We believe that there is ample evidence in support of this assumption in a variety of other reports and studies, so we have decided not to focus on the scientific aspects of global warming. We believe the time has come for regulators to work with the insurance industry to thoroughly examine the impact of climate change issues on the insurance industry and make necessary regulatory changes and raise important issues in order to protect consumers and ensure a vibrant insurance market as we move into the future.

It is important to note that this white paper was exposed for public comment and revised in light of the comments received on several occasions from March 10, 2007 to May 30, 2008. It began as an overview of climate change concerns related to insurance and insurance regulation and gradually became a more complete white paper on the topic. It is also important to note that there are many constituencies with a wide range of opinions regarding the impact of climate change on insurer operations. Thus, while interested parties generally agree that climate change is occurring, there are a variety of opinions on what that means for insurers and how much time and energy insurers need to expend on evaluation and reporting of their climate change activities.

SOLVENCY OVERVIEW

Investment Implications

Although market regulation issues and strategies to mitigate the impact of climate change will vary by line of business, solvency-related risks remain central to all insurers and lines of business. As such, the threat that climate-change-driven weather-related risks pose to insurer solvency is of universal concern for insurance regulators, especially considering that insurer financial stability is heavily dependent on its investment portfolio. So it is imperative we examine how climate change will impact the investments insurers hold and establish applicable regulatory standards for the investment practices of insurers.

Direct and indirect investments in real estate represent a portion of all assets held by insurers. While much of this direct investment is held by life insurers, most insurers hold some direct real estate investments for their own operations and some indirect investment for production of income or sale. Many of these properties are located within coastal areas with increasing risk from climate-change-influenced weather perils such as hurricanes and flooding. Gradual changes like rising sea levels influenced by climate change also pose a risk to structures in these areas. As investors in these properties, insurers may be exposed to greater investment risk. Insurance regulators need to recognize that the risk of weather-related losses on

real estate is complex. It can arise not only from declining asset values, but also the costs of fortification, physical damage to structures, and associated business interruption.

Insurers hold reserves funded by investments in assets that are secured in part by real estate. These indirect investments in real estate include mortgage-backed securities and pass-through securities. Climate change poses a risk to these assets as well. In the event of climate-influenced catastrophes, increased mortgage defaults may be expected as owners of property struggle to make mortgage payments under these stressful circumstances. Premium increases or market withdrawal that results in a lack of affordable insurance coverage could trigger technical mortgage defaults. These technical mortgage defaults due to non-availability of property insurance will impact mortgages in which insurers have invested. This leads to concerns that mortgage lenders may become a property insurer of last resort, as they are required to obtain insurance on property on which they hold mortgages.

Aside from risks to investments in real estate, insurers also face risk from investments in sectors of the economy that have heavy exposure to the effects of global warming. Insurer investments in bonds, preferred stocks, and equities with firms of substantial exposure to climate-change-influenced catastrophes become increasingly problematic. These firms not only face direct weather-related losses to property and potential business interruption, but possibly product and environmental-liability-related losses from possible litigation over pollution emission. As the court system establishes the parameters of legal accountability for climate change to individual sectors of the economy, exposure to such liability may present new challenges for those industries. Municipal bonds, a significant investment holding for many insurers, are another potential source of risk as municipalities face increasing pressure and ultimately costs to adapt to the impacts of climate change.

Investment Opportunities

Although climate change will challenge the existing methods for regulating the investment practices of insurers, the move to mitigate its effects will also provide new investment opportunities. These investment opportunities are becoming available as new economic sectors emerge to provide goods and services that reduce greenhouse gas emissions (GHGs) or that are carbon-neutral. The move from the current system of energy use to new alternatives will involve substantial changes to the generation and distribution of new forms of energy. Development of technology to make the production and use of energy more efficient from emerging clean-energy sources will require capital and infrastructure to create, generate and distribute energy from those sources. Increased investment in this infrastructure may be an attractive opportunity for some insurers in certain circumstances.

Some parties have recommended carbon trading as a means of reducing the impacts of climate change by reducing GHGs. Carbon trading is a potential new venue for insurer investments in the years to come. Insurers may also be able to hedge against the potential claims arising from catastrophic events by investing in commodities that will be needed in the event of catastrophe influenced by climate change. To that end, the NAIC should work with the insurance industry to determine what role might be appropriate for insurers in carbon markets, both as a means to hedge climate risk and to potentially develop insurance products to help entities participating in carbon markets.

PROPERTY AND CASUALTY INSURER AND REGULATORY CHALLENGES

Property and Casualty Insurer Financial Issues

Working intensively with their domestic insurers, regulators have an opportunity to help insurers address the challenges to insurer solvency posed by climate change. Domestic regulators should begin a dialogue on an insurer's financial exposure to loss resulting from a catastrophe and small weather extremes. Regulators should encourage insurers to examine their business to consider the impact of climate change.

As part of this examination, insurers who have not yet done so already should be encouraged to undertake an analysis of geographic spread of property exposures, including a review of the controls in place to assure that the insurer is adequately addressing its net exposure to catastrophic risk. This analysis should also consider different time frames that take into consideration the expected useful life of the assets being insured. Regulators should review studies made by or on behalf of the insurer using catastrophe modeling. Insurers should review the limits, cost and terms of catastrophe reinsurance, including reinstatement provisions. As climate change is a challenge of unprecedented scope for insurers, regulators should encourage and work with insurers to consider creative methods of risk distribution such as catastrophe bonds and other alternative capital sources, including lines of credit and other appropriate instruments.

Regulators should work with insurers to see that the insurer has a reasonable contingency plan 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.

This contingency plan should give consideration to an insurer's enterprise risk, such as the potential for an event triggering both problematic and correlated insurance and investment losses.

Working together, regulators will need to develop new solvency regulatory tools to meet the challenges of climate change. For example, regulators may consider a requirement of a statement of catastrophe or extreme weather risk by the enterprise risk manager, actuary and risk modeler. The development of an information collection tool that prompts an insurer to analyze and disclose climate risks faced by the insurer and potential responses of the insurer to those risks would allow regulators, investors and consumers to evaluate the insurer's climate change knowledge and planning. Such an information collection tool should provide information to the public but provide insurers the opportunity to keep legitimate trade secret information confidential. Given that climate change is global, that the number of catastrophic losses is increasing internationally, and that some emerging economies are generating increased properties and increased values, regulators must begin to consider whether there will be enough capital in the international marketplace to finance the risk. They also need to recognize that some U.S.-domiciled insurers may have cross-border or international insurance exposure in emerging markets where climate-change-influenced risks are high and preparedness is low. States should also strongly consider catastrophe reserving as means to encourage sound enterprise risk management to help ensure adequate capital is available for catastrophic loss potential impacted by climate change.

Alternative risk transfer vehicles need to be explored, and this industry needs to improve its educational outreach. Regulators could assist with the development of common terminology and encourage the development of a more transparent marketplace. However, alternative risk transfer methods are not necessarily applicable to addressing the full spectrum of climate change risk exposure, especially the impacts from smaller scale, diffuse and gradual events.

Property and Casualty Insurer Loss Prevention and Mitigation Issues

This section will address how insurers can participate in mitigation of climate change. The Federal Emergency Management Agency (FEMA) has defined mitigation of natural catastrophes as the "ongoing effort to lessen the impact disasters have on people's lives and property through damage prevention." When addressing climate change, the term "mitigation" would also include actions to bring about emissions reductions. Coordinating measures that reduce vulnerabilities and stabilize climate changes are principles that can guide public policy, private investment, and insurance practices.¹

The Intergovernmental Panel on Climate Change (IPCC) is a scientific intergovernmental body set up by the World Meteorological Organization (WMO) and by the United Nations Environment Programme (UNEP). It is made up of representatives of governments (open to all member countries of WMO and UNEP) and scientists from all over the world who participate in the work as authors, contributors and reviewers. The IPCC predicts that flooding, fire, tropical storms and other extreme weather events will increase in North America due to global warming and climate change.² This increase, coupled with rising property values, can be expected to significantly increase claims paid by property and casualty insurers. As such, insurers have a vested interest in confronting and mitigating the challenges posed by climate change.

Property and casualty insurers have a unique opportunity to reassess how they approach their business. There is a void of solid risk management information for most businesses and families related to how climate change will affect their lives or business operations. This presents an opportunity to insurers to refine their business plans. Regulators have a role to play in encouraging insurers to utilize sound risk management principles. Regulators and insurers should seek ways to educate businesses and families on how to reduce exposures to loss so insurance coverage is affordable and available. Declining to write coverage or reducing coverage should be a last option and based on sound risk management principles. Insurers and reinsurers have actively been involved in promoting loss mitigation through efforts such as the Institute for Business and Home Safety (IBHS), the Federal Alliance for Safe Homes (FLASH) and the upcoming industry-sponsored attraction at Disney's INNOVENTIONS at Epcot, entitled "StormStruck: The Tale of Two Homes," to name a few. Businesses and families would be well served by broader dissemination of loss mitigation information. As a part of risk assessment, regulators may also consider global capital and enterprise risk management by insurers, taking into account capital adequacy, assessment of internal controls, recognition of qualified internal capital models, and effective corporate governance.

One example of the ongoing industry efforts to study and advance loss mitigation is StormStruck. RenaissanceRe, WeatherPredict Consulting, FLASH, State Farm and Simpson Strong plan to launch this attraction in late summer 2008 at INNOVENTIONS at Epcot at the Walt Disney World Resort. The attraction will combine experiencing what it feels like to

¹ The Center for Health and Global Environment, Harvard School of Medicine, "Climate Change Futures: Health, Ecological and Economic Dimensions." Sponsored by Swiss Re and the United Nations Development Programme, September 2005. p. 103.

² Intergovernmental Panel on Climate Change, Working Group II, "Climate Change 2007: Impacts, Adaptation, and Vulnerability." Summary for Policymakers, pp. 10-11. Available at <http://www.ipcc.ch/SPM13apr07.pdf>.

be in severe weather with learning about the associated risks and ways to protect homes. It is intended to raise public awareness about the latest risk mitigation research and recommendations. (See RenaissanceRe's 2007 Annual Report discussing mitigation activities at <http://www.sec.gov/Archives/edgar/data/913144/000119312508075337/dars.htm>, pages 14-17.)

The insurance sector is uniquely positioned between the two ends of the climate change spectrum—the causes and impacts. Insurers insure carbon-intensive industries as well as homes, autos and pollution-emitting airplanes that are some of the primary causes of anthropogenic (human-caused) greenhouse gas emissions.³ Insurers have the potential, in keeping with their historical role, to be significant innovators in contributing to the solutions of climate change by managing and mitigating both the causes and the impacts of catastrophes brought on by such change. For example, insurers can create new products that increase incentives for behavioral change, lobby for regulatory change necessary to reduce risks, participate in the establishment and enforcement of progressive building codes and land use planning guidelines, and show industry leadership by expanding the assessment of climate change risks.⁴ Such efforts could yield long-term benefits for the insurer, where it benefits from lower and more manageable catastrophe losses resulting from such changes.

Building Codes

Insurers have historically played an active role in the mitigation of losses from earthquake and fire disasters. As a result of these disasters, insurers led the effort to improve building codes and develop new building and loss mitigation techniques to reduce the effects of fire and earthquake. Likewise, insurers can help mitigate the impact of climate change by extending their historical role in promoting adoption and vigorous enforcement of uniform building codes. They can also promote building code upgrades and retrofits of existing structures (not otherwise required to meet current standards) by offering premium discounts for proven loss mitigation building techniques, and by advocating for lender- or government-sponsored low-interest loans for these mitigation activities. Additional costs to insurers could be offset by changing the IRS Code to provide for tax-deferred catastrophe reserves.

Insurers recognize that statewide building codes—and adequate enforcement of those codes—play a vital role in public safety and loss prevention.⁵ In promoting adequate building codes and enforcement, insurers can utilize the ISO (Insurance Services Office) Building Code Effectiveness Grading Schedule (BCEGS™) program to obtain assessments of community building codes and learn how these codes are enforced.⁶ ISO has advocated insurers' use of the BCEGS program assessments, which place special emphasis on mitigation of losses from natural hazards, because it believes municipalities with well-enforced, up-to-date codes should demonstrate better loss experience, which insurance rates can reflect. The prospect of lessening catastrophe-related damage and ultimately lowering insurance costs provides an incentive for communities to enforce their building codes rigorously. This is good business for insurers and the nation.

Insurers can be instrumental in encouraging property owners to take proactive steps in advance of climate-influenced weather events to mitigate damages. In the event of widespread climate-influenced weather losses, reconstruction according to improved construction standards designed to avoid future losses would help end the cycle of continued rebuilding of structures to relatively modest standards. For insurers, offering coverage for the increased construction costs to bring a damaged home or business up to current building code standards presents a market opportunity and potential added premium revenue.

Although insurance regulators do not have a direct role in developing or enforcing building codes, there is an opportunity for them to work with insurers in encouraging communities to adopt and enforce strong building codes. Further, regulators should recognize the benefits and encourage insurers to offer premium credits for policyholders residing in communities with strong and effectively enforced building codes. They can also encourage the sale of enhanced coverage for homes built under less rigorous building codes so that a rebuilt dwelling will be better able to withstand the weather perils to which it is exposed.

³ Ross, Christina, Evan Mills and Sean B. Hecht, "Limiting Liability in the Greenhouse: Insurance Risk-Management Strategies in the Context of Global Climate-Change." *Stanford Environmental Law Journal*, Vol. 26A, p. 316, 200. Via Social Science Research Network: <http://ssrn.com/abstract=987942>.

⁴ The Center for Health and Global Environment, Harvard School of Medicine, "Climate Change Futures: Health, Ecological and Economic Dimensions." Sponsored by Swiss Re and the United Nations Development Programme, September 2005. p. 105.

⁵ Institute for Business and Home Safety, "The Benefits of Statewide Building Codes." Natural Hazard Mitigation Insights, November 2005. Available at <http://www.ibhs.org/publications/view.asp?cat=90&id=633>.

⁶ Information available at <http://www.isomitigation.com/docs/about00001.html>.

Additionally, individual states need to develop and enforce appropriate statewide building codes. According to the Institute for Business and Home Safety (IBHS), 12 states have no state residential building codes and four states have no commercial building codes.⁷

Land-Use Planning

Ultimately, property insurers, regulators and state and local governments have an important role to play in the ongoing deliberation over land-use planning. Land-use planning is an important component of climate change mitigation.⁸ Examples of hazards created by land-use planning that do not take the potential impact of climate change into account abound across the United States. For example, in the western regions of the U.S., the unchecked expansion of residential development into forested lands has caused increased risks to life and property from wildfires. Wildfires consume an average of 5 million acres per year across the United States. Between 1985 and 1994, wildfires destroyed more than 9,000 homes in the United States at an average annual insured cost of about \$300 million. This is three times the number of homes lost to such causes during the three-decade period prior to 1985.

Some of this increase is attributed to new home developments in high-risk areas.⁹ Examples of such development abound. Recent wildfires in California are expected to result in insured losses approaching \$3 billion. In Colorado, developments are crawling across the base of the Rocky Mountains and sweeping up toward the Continental Divide. In 2002, the 137,000-acre Hayman Fire destroyed 132 homes in this region. A December 2004 Brookings Institution report predicts that in the West, about 45 percent of the houses being used in 2030 will have been built since 2000. Most of this growth, says the report, will occur at the urban edge in natural or agricultural areas. Arizona, Nevada and Utah will lead the nation in this type of development.¹⁰ In addition to wildfire hazards created by expansion of growth into forests, development of flood plains protected only by levees has increased the risks to life and property from floods. This is occurring across the country, from California to Missouri.¹¹ Finally, in the east and south, the increased development of coastal properties has caused increased risks to life and property from hurricanes.¹²

While most development and land-use decisions are made at the local level, these decisions can have profound impacts on state and federal resources. We need look no further than the \$19 billion deficit of the National Flood Insurance Program (NFIP) and the \$1.5 billion¹³ the U.S. Forest Service alone spent during 2006 on wildfire suppression costs to protect homes in the wildland-urban interface to see the impact local development decisions can have on these resources. The recent California wildfires are another reminder of the difficulties of integrating homes and the wild land-urban interface area.

It is in the business interests of insurers to support sound public policy that reduces risk and makes risks more predictable. Insurers and regulators can educate and encourage policymakers during the planning and zoning process to make sustainable decisions to limit development or sensibly develop in fragile or high-risk areas such as coastal areas and forest fringes. If new development is not thoughtfully planned, the availability and affordability of insurance will significantly impact development in these areas. As such, insurers can heavily influence land-use policy in the future, either directly as an advocate for sustainable growth, or indirectly through actuarially based pricing and availability of insurance coverage.

Insurance regulators have a role to play in land-use planning. Historically, insurers have led the way in their support for development of sound building codes and land-use planning. Regulators should continue to use their influence to educate consumers, and inform communities and state and local governments, that allowing building in harm's way can be expensive and that insurance might not be readily available.

⁷ http://www.ibhs.org/building_codes/

⁸ Intergovernmental Panel on Climate Change, Working Group III, "Climate Change 2007: Mitigation of Climate Change." Summary for Policymakers, 2007, p. 34. Available at <http://www.ipcc.ch/SPM040507.pdf>.

⁹ The Center for Health and Global Environment, Harvard School of Medicine, "Climate Change Futures: Health, Ecological and Economic Dimensions." Sponsored by Swiss Re and the United Nations Development Programme, September 2006. p. 67.

¹⁰ Best, Allen, "How Dense Can We Be?" *High Country News*, June 13, 2005.

¹¹ Saulny, Susan, "Development Rises on St. Louis Area Flood Plains." *New York Times*, May 15, 2007. Hoge, Patrick, "Floodplain Development Questioned." *San Francisco Chronicle*, January 30, 2006.

¹² Chu, Cathy, "Katrina Renews Calls for Change in Rebuilding Rules." *USA Today*, August 21, 2007.

¹³ <http://www.fs.fed.us/fire/BR6988-1.PDF>

Impact on Policyholders

The impact of climate change on insurers is ultimately borne in large part by policyholders. Reductions in coverage availability of personal and commercial property insurance have been predicted as a likely outcome of global warming. Regional coverage unavailability has not occurred in over a century, at which time large insurers were uninterested in covering property in the newly developing Great Plains and western regions of the United States. Residents of those regions responded by organizing and supporting mutual insurers to cover property. In the present day, however, the call is not for organization of mutual insurers, but rather for the adoption of some kind of federal solution.

Insurers facing the near certainty of losses that exceed premium for coastal regions may be limited in the magnitude of their rate increases on a temporary basis. Recent experience in the southeastern and northeastern U.S. has shown that changing expectations of the long-run risk profiles have made it difficult for insurers to price their products on an actuarially sound basis. Likewise, policyholders face uncertainty as to the real risk, and hence cost, of building in a particular location. As obtaining financing for real estate acquisition requires property insurance protection, further economic development of coastal regions, western forests and other environmentally fragile locations will require a commitment to understand and mitigate the risk that arises as a result of global warming. Before insurance coverage becomes unaffordable or unavailable, consumers, politicians, realtors, builders and other interested stakeholders, will demand regulators and insurers become even more involved in understanding changes in underlying risks and communicating that understanding to policyholders and the public. Regulators and the NAIC should work with the insurance industry to educate these groups about the increased risks associated with climate change and the associated factors that contribute to the cost of insurance. Insurers have long understood that the only way to achieve sustained stability or reduction in insurance costs is to reduce the level of risk. If insurance costs are to be controlled, policyholders need to become active partners in this effort, which means that insurers must continue to push in this direction.

Post-Event Demand Surge

Insurers and risk modelers can also address problems that frequently complicate claims after a natural catastrophe. One such problem is the post-event shortage of contractors and building supplies. Following Hurricane Katrina, capacity constraints for labor and materials drove price fluctuations and substantially increased reconstruction costs. This demand surge, which has been observed in previous large-scale catastrophes, could become one of the biggest drivers of insured losses in years to come.¹⁴

Post-Event Living Expense Increases

Another problem that increases claims after a natural catastrophe is the spike in living expenses as the demand for habitable residences and consumer goods surges. As with the demand surge in construction materials and labor, this demand surge increases insurers' payouts for additional living expenses. There are several ways insurers can lessen the impact of post-event living expense increases. Insurers can minimize coverage problems caused by maintaining insufficient amounts of insurance by encouraging insurance producers to review property coverage amounts with their policyholders. Insurers and regulators can also support legislation encouraging tax free disaster savings accounts, which can help defray the rise in post-event living prices. Additionally, proactive mitigation of existing vulnerable housing and non-residential properties can make a tremendous difference in reducing the demand for temporary accommodations following an event.

Business Interruption Problems with Catastrophic Events

Most consequences of climate change affect more than one line of insurance, including the line of business interruption. For instance, extreme heat events have caused simultaneous insurance losses ranging from loss of life, to wildfire-driven property loss, to crop damages, to electric power plant shutdowns, to associated business interruptions.¹⁵ "Losses due to the disruption of business operations typically range from 20 to 40 percent of claims resulting from hurricanes. Other weather-related triggers for business-interruption claims include lightning, flood and wildfire."¹⁶ Visibility problems during wildfires in Malaysia forced the closing of the country's largest port and many businesses.¹⁷

¹⁴ Westfall, Christopher, "Insurers Balance Supply and Demand (Surge)." KPMG Insurance Insider, March 17, 2006.

¹⁵ Mills, Evan, Richard Roth and Eugene Lecomte, "Availability and Affordability of Insurance Under Climate Change: A Growing Challenge for the U.S." Commissioned by Ceres, December 2005, p. 16.

¹⁶ Mills, Evan, *supra*, at p. 28.

¹⁷ "Malaysia Imposes Emergency as Haze Turns Air Hazardous," *USA Today*, August 11, 2005.

Discounts and Credits as Incentives to use Green Building Materials after Loss

Some insurers, like AIG and Fireman's Fund, have developed new products that provide coverage for green buildings. Fireman's Fund Insurance Company has introduced Certified Green Building Replacement and Green Upgrade coverage, a new coverage specifically for green commercial buildings that addresses the unique risks that come along with sustainable building practices.¹⁸ This offering of coverage protects buildings that are green-certified as well as buildings and facilities whose owners would like to capture green benefits. The coverage for LEED (Leadership in Energy and Environmental Design) certified buildings offers a discount due to lower risk. Conventional insurance policies only cover the cost to restore a building to its original condition. Under Fireman's Fund Green Building Replacement and Green Upgrade coverage, commercial property owners and managers are able to rebuild and replace with green alternatives such as non-toxic, low-odor paints and carpeting, Energy Star-rated electrical equipment, interior lighting systems that meet LEED or Green Globe requirements, water efficient interior plumbing, and Energy Star-qualified roof and insulation materials.

Fireman's Fund has worked closely with the U.S. Green Building Council's (USGBC) LEED program as well as the Green Building Initiative's (GBI) Green Globes program to ensure that its coverage and upgrade options align with the industry's major green certification processes. As part of the product, Fireman's Fund will pay for the application process for the building to become certified by these organizations.

Insurers can encourage property owners to use mitigating and "green" building materials in repairs through the use of discounts in their homeowner/commercial property insurance products. Currently, discounts are becoming available for homeowners who install solar systems to replace their traditional electricity service. Insurers can also provide discounts for use of recycled, energy-efficient, water-efficient and green-manufactured building materials.¹⁹ By offering discounts in insurance, insurers may not only provide financial incentives for the use of green building materials but may also legitimize their use to skeptical uneducated consumers.

Use of Tiered Rating Plans To Encourage the Use of Low-Emissions Vehicles

Insurers may offer innovative products that can further encourage consumer mitigation of global warming by offering mileage-based automobile insurance or actuarially justified premium discounts to encourage the use of low-emission vehicles, fuel-efficient non-hybrid vehicles and alternative-fuel vehicles. Insurers can further encourage reduction of greenhouse gas emissions, as well as exposure to loss, by providing incentives for consumers to drive less. An effective way to do so would be to give much greater weight to the miles that policyholders drive as a rating factor. Insurers can measure the amount that their policyholders drive in a variety of ways. Indeed, at least one insurer (Progressive) already makes use of Global Positioning Satellite (GPS) technology for some policyholders. Additionally, pay-as-you-drive is broadly available in Europe, Israel and parts of Asia. Travelers Group, the second-largest writer of U.S. auto and homeowners insurance through independent agents, offers a 10 percent discount on auto insurance for hybrid owners. Travelers is the first auto insurance company to begin implementing a discount nationally.²⁰ Farmers Insurance Group also offers a discount of up to 10 percent for customers who own a hybrid or alternative-fuel vehicle. Progressive has similar incentives. In addition, there are a variety of partnerships, such as one in Seattle, that are exploring the impact of these new vehicles. Insurers already back the Corporate Average Fuel Economy (CAFE) standards, which improve fuel economy without compromising safety through reduced vehicle weight.²¹ CAFE standards will lower GHG emissions and should help reduce the impact of global warming and the resultant climate change in the future.

As these and other new technologies are introduced, insurers will assess their risk characteristics to develop actuarially sound premiums. Regulators must be mindful that whenever a new technology is introduced, its risk characteristics are almost by definition unknown. While some will prove successful, some will be proved unworkable. In this situation, pricing is going to be more of an art than a science.

¹⁸ <http://www.insurancejournal.com/news/national/2006/10/16/73335.htm>.

¹⁹ Spiegel, Ross and Dru Meadows, *Green Building Materials: A Guide to Product Selection and Specification*. Hoboken, N.J.: John Wiley and Sons, 1999, p. 27.

²⁰ <http://www.hybridcars.com/corporate-incentives.html>

²¹ Beattie, J., 2002. "Auto Insurers Back New CAFE Plan." *The Energy Daily*, 30 (17):1.

Research and Education

In keeping with their history in developing fire and vehicle safety technologies, insurers can play a role in bringing to market new technologies that help increase consumers' resilience to climate change impacts as well as curbing greenhouse gas emissions.²²

Insurers can encourage consumers to engage in climate change mitigation by educating them about the use of green building materials and low-emission vehicles. Hybrid cars (commonly petroleum-electric hybrid vehicles) have been on the market since the end of the last decade. However, it is only in recent years that their popularity has soared so much so that, even though less than one percent of registered vehicles today are hybrids, experts predict that hybrids will make up nearly 15 percent of vehicles on U.S. roads in the next 10 years. Consumers should be made aware of the benefits of owning a hybrid, such as tax and auto insurance premium discount incentives. Further, directly relating premiums to fuel efficiency should be explored.

Examples of where insurers have engaged in various direct consumer education activities relevant to the question of climate change include the following: USAA has prepared an energy efficiency guide for its customers; several Massachusetts insurers gave 10 percent premium credits to homeowners who took a six-hour course on topics such as energy weatherization, home repair and lead-paint hazards; an Insurance Australia Group (IAG), in partnership with the Australian Financial Review newspaper, has developed education materials on climate change for the high-school curriculum. IAG already offers an interactive Web-based consumer education tool.²³

Insurers might also consider providing low- or no-interest loans to make property improvements that mitigate potential recurring damage from weather-related losses impacted by climate change. The benefits of mitigation can be profound in terms of reducing insured losses in the face of a catastrophic event. This results in a great benefit for insurers, as they improve their reputation at the same time they reduce future loss costs as policyholders take steps to mitigate losses.

Although they have conducted some research on climate change, insurers should increase the percentage of revenue spent on research and development in order to adequately address the enormity of the problem. The trillion-dollar U.S. insurance industry probably puts only 0.01 percent of its revenues into such endeavors. It could do much more.²⁴

Property and Casualty Insurer Market Issues

Policyholders will benefit from insurers re-evaluating their products in the face of climate change and the significant potential for catastrophic loss. The types and scope of coverage offered to policyholders will need to address new situations. Climate change increases the need for contingent business interruption insurance. Litigation over carbon releases will create a need for Directors and Officers liability coverage to address a broader understanding of pollution. There may, for example, be a need in the market for private supplemental unemployment insurance triggered by a loss of employment as a result of a catastrophic event. New types of insurance are being created to meet these needs, and wider adoption of these coverages will encourage insurers to further develop new products.

New climatic conditions will give rise to new types of losses, and these will need to be understood by both insurers and their policyholders. For example, warmer temperatures and more moisture in coastal regions and elsewhere may foster additional exposure to mold. Heat waves may result in "brown outs" or a complete failure of the "grid" in some areas, leading to costly power interruptions that create property losses. Melting polar ice and permafrost will compromise building foundations and other infrastructure, raise the sea levels and inundate coastal properties. As policyholders grapple with these new challenges, insurance regulators will provide a useful role in answering questions and resolving disputes.

As part of adjusting to these new realities, insurers, policyholders and regulators will need to consider whether certain types of property loss are simply uninsurable. For example, insurers will need to consider such issues as whether in the event of a severe drought, consequential losses triggered by a loss of water, are insurable in the first place. Increasing drought conditions may lead some to ask the same question regarding whether whole regions subject to brush, prairie and forest fires are able to be insured against fire. Insurance regulators will need to consider whether insurers can carve out of the insurance marketplace products or hazards for which there is a public need, without imperiling the role of the insurance industry in the

²² Mills, Evan, "From Risk to Opportunity: How Insurers Can Proactively and Profitably Manage Climate Change," Commissioned by Ceres, August 2006, p.26.

²³ Mills, Evan, supra, at p.28.

²⁴ Mills, E., R.J. Roth Jr., and E. Lecomte, 2006. "Availability and Affordability of Insurance Under Climate Change: A Growing Challenge for the U.S." *Journal of Insurance Regulation*, Winter 2006, Vol. 25, Issue No. 2, pp. 109-149.

private sector economy. If current residual market mechanisms to pick up the discarded risks from the private market is an inadequate response to these issues, insurers and regulators will need to consider whether severe restrictions and limitations may result in a public response calling for new governmental insurance plans to cover losses that private insurers are unwilling to underwrite.

Property and casualty insurers need to be mindful that when they abandon markets or make policy provisions too restrictive, people and businesses seek other alternatives. For example, when private insurers shied away from writing product liability insurance, the Product Liability Risk Retention Act of 1982 was adopted by Congress. In 1985 the law was changed to allow risk retention groups to sell other forms of commercial liability insurance. Proponents of risk retention groups are encouraging Congress to expand the Act to allow risk retention groups to sell property insurance. Once markets move to obtain alternative coverage, they are unlikely to return to the traditional voluntary markets.

LIFE INSURER ISSUES

While property and casualty insurers may face the greatest impact of climate-change-related catastrophic events, life insurers face challenges as well. Life insurers manage products that American families rely on for financial security during retirement and in the event of premature death. Because life insurers hold long-term assets and enter into long-term contracts, actions taken today may have significant implications for future solvency. Life insurers have an obligation to their policyholders to fulfill all contracts, and must be prudent when managing investments and issuing policies. Not preparing for the possible effects of climate change may indeed have serious repercussions for both life insurers and policyholders.

Unlike many other industries, the primary business of life insurers is to underwrite and *manage* long-term risk, including mortality-linked risk. Life insurers pool, diversify and hedge their risk in preparation for catastrophic events and any resulting change in mortality. In order to be prepared for climate change, life insurers need to keep abreast of changes in the frequency and/or severity of weather-related events, and should try to determine the degree to which an individual catastrophic event can be attributed to climate change as opposed to other factors. Life insurers should also monitor scientific advances in forecasting, storm tracking and communications; improvements in federal, state and local disaster mitigation and management; and changes in public awareness and attitudes, all of which may *lower* fatalities associated with catastrophic events. As the public becomes aware of the danger posed by extreme weather, it will be more proactive and will be more likely to follow mandatory and voluntary evacuation orders or take other life-saving actions. Paradoxically, it is possible that increased public awareness, coupled with technological and logistical advances, may ultimately result in an overall *reduction* in mortality related to catastrophic events, even in an environment of climate change.²⁵ Life insurers must consider all these variables when anticipating future changes in mortality resulting from the possible effects of climate change.

Like other industries, life insurers should also prepare for the impact of climate change on investments. Since they are in the business of managing long-term financial risk, this is something they currently do, and the expectation is that this will continue. Climate change is one of numerous risk factors considered by life insurers when they make investment choices, with the impact of risk varying according to the type of investment made.

Life insurers should be particularly mindful of real estate investments. Currently, life insurers hold 0.7 percent of their assets in real estate and 6.5 percent in mortgages. Of their total mortgage holdings, 21.4 percent are for properties located in coastal states (i.e., 1.4 percent of all investment holdings), which are the most likely to experience a direct strike from a hurricane, though not all of these properties are sufficiently close to the coastline to be affected.²⁶ Predictions of the rate at which the frequency and severity of climate change-related weather events will increase are still unreliable, but as scientifically and statistically sound techniques are developed, life insurers will be better able to estimate the precise impact on the lives they insure and the investments they hold and will adjust accordingly.

²⁵ History supports this assertion. Though population density in coastal areas has increased significantly, deaths related to hurricanes have declined. For example, of the top 10 most deadly hurricanes that made landfall in the United States, nine occurred before 1958 and eight occurred before 1936, Blake, Eric S., Edward N. Rappaport, Christopher W. Landsea, "The Deadliest, Costliest, and Most Intense United States Tropical Cyclones from 1851 to 2006 (and Other Frequently Requested Hurricane Facts)," National Weather Service, National Hurricane Center, Miami, Florida, April 2007).

HEALTH INSURER ISSUES

At a very basic level, human health will be impacted by climate change in ways that are not yet fully understood nor anticipated. There are a host of possible events and associated consequences—some of which will compound already existing health issues such as asthma—that will require regulators to better understand and evaluate their effect on public health and the health insurance industry.²⁷ Among the possible events are:

- Hurricanes and other flooding events where people are exposed to flood waters. The flood waters from Hurricane Katrina provide a perfect example. People were exposed to many bacteria (e-coli and others) and hazardous chemicals as they fled their homes. Many were made sick over the short term, including protracted mental health issues. Only time will tell if there are significant long-term consequences.
- Health issues associated with heat waves. The 2003 European heat wave not only killed many, but severely strained the ability of European nations to deal with the immediate health consequences. There were some nations where the summer holiday (vacation) schedule left few trained medical personnel available to deal with the influx of those affected by the heat wave.
- Climate change can also adversely impact the prevalence of vector-borne diseases, food poisoning, water quality, aeroallergens, and the health of natural systems that can cause economic losses for humans, sometimes insured.²⁸
- The combination of more airborne allergens, rising temperatures, greater humidity, more wildfires, and more dust and particulate pollution may considerably exacerbate upper respiratory disease (rhinitis, conjunctivitis, sinusitis, asthma) and cardiovascular disease.²⁹

GOVERNMENT ROLE

National Flood Insurance Program Reform

Changing weather patterns and rising ocean temperatures as a result of climate change will also likely continue to put financial stress on the National Flood Insurance Program (NFIP). Currently, the NFIP has a \$19 billion deficit, and this deficit may increase each year because of \$900 million in subsidies to properties that are not paying actuarially based rates. In addition, the cost to the NFIP of servicing its debt consumes much of its revenue. Because millions of Americans depend upon the NFIP for flood coverage, it should consider fundamental reform, including:

- Eliminating subsidies and charging actuarially based premiums for all policyholders, even if such pricing must be phased in over time.
- Examining underwriting guidelines and loss potential in consideration of repetitive loss properties.
- Encouraging, requiring and investing in loss mitigation.
- Accelerating modernized flood mapping.
- Carefully examining rates, eligibility and underwriting requirements.
- Stricter enforcement of current flood plain coverage requirements.
- Expanding flood coverage requirement to properties beyond the Special Flood Hazard Areas (“100-year flood” properties).
- Changing policy terms and conditions to more closely match insurance products offered in the voluntary property insurance market for other perils.

²⁷ Climate Change and Public Health, statement of Julie L. Gerberding, M.D., M.P.H., Director, Centers for Disease Control and Prevention; Administrator, Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services. Testimony to Committee on Environment and Public Works, United States Senate, October 23, 2007.

²⁸ Mills, Evan; Richard Roth and Eugene Lecomte, “Availability and Affordability of Insurance Under Climate Change.” Commissioned by Ceres, December 2005, p.28.

²⁹ Ibid.

It may also be time to start to discuss whether the NFIP in its present form continues to serve the best interests of both its policyholders and taxpayers. Considering the financial condition of the program, the confusion from consumers regarding flood coverage and traditional homeowner insurance, and the “wind vs. water” disputes we have seen in the wake of hurricanes Katrina and Wilma, moving to an all-perils property policy that includes flood should be further studied and evaluated to see if it may be a better solution. The NFIP may be more effective in a reinsurance role in flood events than a primary insurer of the loss.

Disaster Mitigation Grants and Loans

While land-use decisions and building codes can reduce property losses for properties in areas developed in the future, existing structures in high-risk areas still present a challenge. For instance, according to a January 2007 study by AIR Worldwide,³⁰ the insured value of properties in the hurricane-prone U.S. East and Gulf Coast has doubled in the last decade to more than \$7 trillion. The sheer magnitude of this exposure underscores why mitigation needs to occur as we adapt to a future with potentially more intense and frequent hurricanes from climate change.

Disaster mitigation activities can be an expensive proposition for a property owner. Activities like raising a home for flood mitigation or replacing a roof with more disaster-resistant materials can be very expensive. To help address this situation, lenders or insurers could offer low- or no-interest disaster mitigation loans, grants or other forms of financial assistance for property owners. If such a program could be accomplished, federal and state governments should look for ways to provide tax advantages for those offering the loans and the property owners who invest the financial resources to protect their property. Governments could consider ways to encourage lenders and insurers to take these steps.

The federal government has a unique opportunity to show leadership in establishing a disaster mitigation loan program. These loans could be used to make property improvements that mitigate potential damage from weather-related losses impacted by climate change. Congress established Fannie Mae and Freddie Mac to fund affordable housing opportunities across the U.S. These programs could establish a disaster mitigation loan program for properties backed by these resources. Fannie Mae and Freddie Mac could also look at establishing disaster mitigation as a lending requirement for its homeowners or build mitigation into a loan it backs. This may prompt other private lenders to establish similar programs in the lending market to help communities adapt to the increased risk to properties posed by climate change. Legislation that contains a loss mitigation program was recently introduced in the Senate. Senators Harry Reid (D-Nev.) and Christopher Dodd (D-Conn.) sponsored S. 2328, which proposes grants and low-interest loans for appropriate loss mitigation efforts. It is important for insurance regulators to support this legislation.

Reducing Greenhouse Gas Emissions

Increasing anthropogenic (human-caused) greenhouse gas emissions (GHGs) are very likely to be significantly contributing to global warming and the resultant climate change.³¹

As a country, the total U.S. GHG emissions have increased 16 percent since 1990³² and are slated to increase by 50 percent by 2020.³³ Recognizing a similar trend, many developed countries throughout the world have engaged in mitigation strategies and mechanisms to reduce their GHG emissions. The U.S. government should also establish a national strategy to reduce U.S. GHG emissions following the lead of the Regional Greenhouse Gas Initiative³⁴ and the Western Regional Climate Action Initiative.³⁵ While the states involved in these efforts have shown leadership in addressing climate change at the regional level, only the federal government can establish a comprehensive strategy and mechanism to reduce anthropogenic GHGs on a national level. This should help reduce the volatility and uncertainty of weather-related losses influenced by climate change. To that end, the NAIC should develop a policy statement regarding GHG reduction and encourage regulators to advocate for a federal policy to reduce GHGs.

³⁰ http://www.iso.com/index.php?option=com_content&task=view&id=2366&Itemid=211

³¹ http://unfccc.int/essential_background/feeling_the_heat/items/2904.php

³² <http://www.epa.gov/climatechange/emissions/downloads/2007GHGFastFacts.pdf>

³³ http://www.ecy.wa.gov/climatechange/CATdocs/033007mtg1_presentation.ppt#21

³⁴ <http://www.rggi.org/about.htm>

³⁵ http://www.governor.wa.gov/news/2007-02-26_WesternClimateAgreementFinal.pdf

Appointment of a Climate Change Czar

American society has faced pervasive and large-scale social problems like illegal drugs and terrorist threats. As these problems increased in scale and importance, the federal government established new agencies or appointed near-cabinet-level officials to coordinate efforts to combat the problems. The federal government should consider creating an agency or sub-agency responsible to address climate change in a similar fashion. This new entity could create a national strategy, help implement “best climate practices,” and act as a liaison between governments and business as we mitigate and adapt to climate change.

ENCOURAGE OR MANDATE ENHANCED DISCLOSURE

Disclosure of Climate Risk

Over the past few years, the issue of disclosure has become more focused. This is in part due to the more settled view that climate change or at least climate variability should be considered as part of the risk environment. In 2000, the Securities and Exchange Commission (SEC) incorporated climate change reporting in filings of automobile, manufacturing, integrated oil and gas, insurance, petrochemicals and utilities companies. The response rate to the Carbon Disclosure Project is up from only 15 percent in 2003 to 68 percent in 2007. However, that compares to 50 percent in 2003 and 84 percent in 2007 for non-U.S. insurers.³⁶ Only 19 percent of insurance companies filing with the SEC have complied with the requirement.³⁷

Under SEC Regulation S-K and in particular Item 101—Description of Business, and Item 303—Management’s Discussion and Analysis of Financial Condition and Results of Operations, companies that file with the SEC may have already begun disclosing the impact they expect from climate risk. However, three developments in 2007 would seem to increase the concern that any disclosures are accurate reflections of the changing risk landscape.

The first force of change is again the growing consensus around issues of causation and climate variability as exemplified by the Intergovernmental Panel on Climate Change’s April 6, 2007, report.

The second force is the April 2, 2007, U.S. Supreme Court ruling in *Massachusetts v. EPA*, which found that greenhouse gases are pollutants under the Clean Air Act, and thus the EPA had improperly declined to regulate new-vehicle emissions standards. At the federal level, this decision and increased interest by entities such as the Senate Committee on Banking, Housing and Urban Affairs indicate that climate change is growing in force as a political concern.

The third force is exemplified by the January 1, 2007, effective date for California’s Global Warming Solutions Act of 2006. This Act will seek to reduce the state’s greenhouse gas emissions to 1990 levels by 2020. It is now very apparent that activities around climate change are strongest at the state level in the U.S.

These forces, scientific consensus, U.S. Supreme Court recognition, and major state initiatives have changed the risk profile for U.S. businesses, including insurers. As regulators of insurance, commissioners are now faced with selecting the oversight regime for this period of enhanced interest in climate risk. Fortunately, they are not without resources.

Currently Required Disclosure

While regulators are rightly discussing climate risk assessment, it is important to remember that some disclosure is already required under current reporting standards. Indeed, climate risk is inherent in the insurance market; it is never zero. Where climate risk poses a material risk, U.S.-listed firms must disclose those risks, since they are bound to disclose all material information to their shareholders. In December 2007, Senators Dodd and Reid noted in a letter to SEC Chairman Christopher Cox that “disclosure is required under Item 303 of Regulation S-K, if the registrant determines that the consequences of climate change or governmental regulation of greenhouse emissions would reasonably be expected to have a material effect on its business, results of operations, or financial condition.” Thus, for some companies, regulators are not discussing the commencement of disclosure but rather the enforcement and/or enhancement of current disclosure requirements.

³⁶ Mills, Evan, *From Risk to Opportunity: 2007 Insurer Responses to Climate Change*, CERES, Nov. 2007, page 29.

³⁷ Fifth Survey notes that Allianz (Germany), Chubb Corporation (US), Cincinnati Financial Corp (US), and Millea Holdings (Japan) reported. The following companies did not report: Ace Limited (US), Allstate Corporation (US), American International Group (US), Ambac Financial (US), Axis Capital (US), Berkshire Hathaway (US), CNA Financial (US), Everest Re Group (US), Fidelity National Financial (US), Hartford Financial (US), Loews Corporation (US), MBIA (US), MGIC Investment Corp (US), Old Republic (US), PMI Group (US), Progressive Corp (US), Radian Group (US), RenaissanceRe Holdings (US) and SAFECO Corporation (US).

SEC requirements are at best a blunt instrument for climate risk disclosure. Apart from SEC requirements, insurance regulators regularly receive Management Discussion reporting from all licensed insurers as part of the annual financial disclosure.³⁸ Like SEC requirements, this discussion may not reach the level of disclosure that some regulators may seek. Nevertheless, for most insurance entities, regulators are discussing the enforcement and/or enhancement of current disclosure. It is important to note that regulators and insurers might disagree over whether a particular risk is material. Since the period and course of climate change is uncertain, regulators will no doubt be engaged in discussions with insurers if they have vastly different opinions about materiality. Refinement of disclosure requirements related to climate change might clarify the level of disclosure expected by insurance regulators.

Coverage of Disclosure

In the absence of detailed mandatory reporting requirements there are several groups that may wish insurers to increase disclosure of their response to climate risk. Various interest groups and bodies have the ability to encourage and in some situations force disclosure. Insurers could be faced with a variety of differing reporting requests. In the interests of uniformity and regulatory certainty, regulators and industry that are proactive in disclosure will have greater control over the final forms of disclosure. Some of these groups and bodies that have been active in encouraging and trying to force disclosure are:

- Investors, particularly institutional investors and organized groups of individual investors.
- Insurer management, who may wish to be seen as leaders or who are personally interested in climate risk, or who lead insurers that are particularly vulnerable to climate risk.
- Professional bodies involved in establishing accounting standards, auditors, and actuaries, who as professionals may see climate risk as poorly understood and/or measured, and hence a vulnerability to the integrity of their work.

Frameworks for Disclosure

There are several frameworks that have developed for disclosure of climate risk, and some had insurer participation. The response rate to the Carbon Disclosure Project Survey of U.S. S&P 500 Insurers was 68 percent in 2007, suggesting that disclosure requirements are not onerous.³⁹ See Table 1 for examples. Regulators should be encouraged by the action of the World Economic Forum (January 2007) in forming the Climate Disclosure Standards Board (CDSB). This group will attempt to harmonize the core measures of reporting groups and establish a generally accepted framework for climate-risk-related reporting by corporations. These groups are California Climate Action Registry, Carbon Disclosure Project, CERES, The Climate Group, International Emissions Trading Association, World Economic Forum Global Greenhouse Gas Register and the World Resources Institute.

As regulators we do not have the problem of an insufficient number of measures, but rather a wide range of measures. Thus it may be straightforward to craft disclosures that increase regulatory burdens only to the level that assures that consumers and shareholders are protected. The NAIC should seek to use existing requirements as a starting point so as to not increase insurers' disclosure burden beyond what is needed for effective regulation.

The SEC requires companies to report material risks, which would include material climate change risks. Thus SEC disclosures are limited by the materiality of climate change risk to the reporting entity. Other frameworks go further. There are now several competing frameworks, such that participation in all would be burdensome and defeat the goal of uniformity in regulation. Through proactive, thoughtful and coordinated action of the NAIC, the commissioners may reduce the potential regulatory burden that may be placed on insurers by multiple disclosure frameworks in the future.

NAIC Role in Disclosure

Given the availability of reporting formats and measures, how might the NAIC best assist states in their regulatory role? The NAIC has a long history in fostering uniformity and efficiency through development and adoption of regulatory frameworks and reporting formats. However, states are now conducting their own task forces focused on climate risk. Consequently, any NAIC activities will need to mesh with the state initiatives. Moreover, federal government interest in climate change appears to be growing. As the Climate Change and Global Warming Task Force considers disclosure, the content, format and mechanism of collection need to be considered. Industries, like insurance, that span states are rightly wary of multiple

³⁸ See NAIC Annual Statement Instructions, Management Discussion and Analysis Reports, Instructions.

³⁹ CDP5 S&P 500 Report, 2007. See www.cdproject.net.

reporting requirements. To be effective, the NAIC must move decisively yet remain open to refinement over time. The following principles may prove useful:

- Consumer protection is central to insurance regulation. With regard to climate risk, consumers will require both information about possible changes in risk and confidence that their insurer has the financial capability to meet their contractual commitments.
- To achieve consumer confidence regarding its solvency, an insurer must be able to demonstrate that it has identified sources of risk—particularly changing climate risk—assessed the relevance to its operations, and taken appropriate action with regard to pricing, availability and reserving.
- Confidence related to solvency may also extend to the quality of assets held by the insurer, since some assets might be adversely affected by changing climate risk. An insurer must be able to demonstrate that they have identified sources of risk in their asset holdings.
- Consumers who perceive themselves to be in locations with growing climate-related risks will require more and more information on how they can ameliorate these risks. Here insurers are in an ideal position to inform and educate and hence retain customer business.
- Insurance consumers are best protected by a functioning competitive insurance market that delivers products that are affordable and adequately cover risk that consumers face. While regulators are charged with consumer protection, it is vital that functioning competitive insurance markets are not compromised in the process. Thus interaction with both consumer groups and industry groups will be required for a successful outcome. Insurance regulators must strike a balance between two competing goals—maintenance of an appropriate level of solvency oversight with the public’s perception that insurance is always too expensive. This means that regulators should recognize the legitimate needs of insurers to send appropriate price signals regarding climate change risks, and that regulators should show reasonable flexibility when reviewing innovative discounts, products and other incentives that promote sound environmental practices.

The NAIC can assist states by sponsoring development of “best practices” in each of these areas. The NAIC provides a forum to bring together all interested parties for a transparent discussion and development of required information standards.

For the “beginning steps” level, this might be done in a single summit with reporting to begin in 2009-10. There are obvious candidates, such as the “Carbon Disclosure Project” or the SEC format. Such a summit could occur in the first quarter of 2009.

For the next level of detail, the NAIC might begin, in 2008, to develop more sophisticated methods. Several states and other bodies have considerable resources available so that measures could be made available by the end of 2008 for reporting to begin in 2009-10.

CONCLUSION

Global warming and the resultant climate change will have impacts across multiple lines of insurance. Whether it is property and casualty, health, or life insurance—the impacts will be felt across many sectors of the economy that depend on insurance to provide financial security.

Insurance regulators, working together, must continue to develop tools to evaluate these risks. Regulators, like companies, are operating under conditions of uncertainty with regard to the extent of climate change risk and the models used to study those risks. Nonetheless, regulators have the duty to protect consumers, despite knowing that companies will not have complete information and therefore, not be able to report with certainty. Under these circumstances, the framing of questions and evaluation of responses must take the inherent uncertainty into account. To that end, the relevant NAIC committees should consider the content, format and mechanism of collection of disclosures.

This white paper is the beginning of a process rather than the end. One might view it as the first step of many in assessing where the insurance industry is with regard to measuring the impact of climate change and global warming on its business operations. There are many things discussed in the white paper that call for further concerted action by insurance regulators as they consider how best to encourage or even require insurers to thoroughly address growing climate change risk in order to protect consumers and insurer solvency. Regulators also have a role to play in ensuring that environmental benefits claimed by insurers are authentic and reasonably quantified to lend credibility to these efforts.

The issue of disclosure deserves immediate attention by insurance regulators. It is critical in moving forward that insurance regulators be engaged in answering the following questions:

- Are insurers adequately including climate risk, and climate risk changes, in their internal risk assessment process? This set of questions should include information about issues of data collection, use of computer models as advancements occur related to climate change modeling, and policy formation by the insurer.
- Are insurers adequately informing and incentivizing policyholders as to their risks? This set of questions should include issues related to policy coverage (including flood, wind/water, etc.), methods of mitigation (in terms of disaster resilience and GHG reductions), and pricing. An informed policyholder can be a great asset to the insurer.
- Are the insurers' governance structures sufficient to keep board members informed about climate risk? This set of questions should include issues related to board member education, internal transparency and ultimately coverage for liability of directors and officers (D&O).
- Are insurers taking adequate steps to mitigate their own risks and to foster policyholder mitigation? This set of questions should include issues regarding policyholder relations, market conduct and policyholder education.

We are all in this together, and everyone must be ready, willing and able to take positive steps to manage GHG output and the various impacts that failure to do so will have on our economy and well-being as a nation. Convening a climate change summit should be the next step. The NAIC Climate Change and Global Warming (EX) Task Force is hopeful that it is a step in the right direction.

Table 1: Climate Risk Disclosure Activities

Country	Body	Content	Coverage	Date
Canada	Canadian Institute of Chartered Accountants	Draft Interpretive Release, "Disclosing the Impact of Climate Change and Other Environmental Issues." Designed to assist companies in their Management Discussion and Analysis (MD&A) reporting, it provides guidance to companies on how to determine the materiality of climate change for the firm. It provides a framework for discussing climate change in relation to a firm's strategy, key performance drivers, capabilities, results and risk.	All companies required to file annual reports.	March 2005
UK	UK Parliament	A law requiring Operating and Financial Reviews (similar to Management Discussion & Analysis sections of SEC 10-K filings). The OFR-required companies discuss and provide key performance indicators on "(a) the employees of the company and its subsidiary undertakings, (b) environmental matters, and (c) social and community issues" to the extent necessary for shareholders to understand how these matters impact the company. Notably, if company directors concluded that such issues – which could certainly include climate change – do not affect the company, they were required to explicitly say so. Although the law was rescinded in fall 2005, many firms have continued to use the OFR as a useful framework, so it appears that it is becoming embedded in the shareholders' expected information.	All UK-listed firms	March 2005
France	Legislature	Adopted the New Economic Regulations, which require reports on a particular set of social and environmental indicators in annual reports. One of the required reporting indicators is company-wide greenhouse gas emissions. French companies began including the new environmental and social data in their annual reports beginning in 2002.	Publicly traded companies in France	2001
U.S.	SEC			2000
U.S.	Emerging Issues Task Force of Financial Accounting Standards Board (FASB)	Considered accounting for emissions, but in November 2003 discontinued work, as it was capturing only part of the issue. Now have pledged to work to harmonize with IASB standards.		November 2003
International	International Accounting Standards Board (IASB), International Financial Reporting Interpretations Committee	Accounting guidance which instructs companies to treat initial emissions allowances/permits (that companies obtain from governments) as intangible assets, and record them at fair value. These standards are in place in many developed countries, such as Australia and those in Europe. The U.S. Financial Accounting Standards Board has pledged to work with IASB to converge U.S. and international standards.		
International	World Economic Forum Climate Disclosure Standards Board (CDSB)	A partnership of seven organizations to establish a generally accepted framework for climate risk-related reporting by corporations. The groups are California Climate Action Registry, Carbon Disclosure Project, Ceres, The Climate Group, International Emissions Trading Association, World Economic Forum Global Greenhouse Gas Register and World Resources Institute. The focus will be on the disclosure of the following key climate issues in company annual reports: <ul style="list-style-type: none"> • Total emissions • Assessment of the physical risks of climate change • Assessment of the regulatory risks of climate change • Strategic analysis of climate risk and emissions management 		January 2007

Table 2: Countdown to Climate Change Standards Convergence

Kyoto Standards		Under Kyoto, 35 industrialized nations have agreed to cap their greenhouse gas emissions, cutting by 5 percent on average below 1990 levels by 2008-2012.	
UN Dialogue Standards		About 200 countries are separately engaged in a U.N.-sponsored dialogue about “long-term cooperative action to address climate change.” The group includes Kyoto nations, developing countries and the United States and Australia, which oppose Kyoto as too costly and unfair.	
U.S. President Bush (May 2007) Standards		Bush’s current U.S. plan, lasting until 2012, brakes the rise of U.S. emissions without mandating Kyoto-style cuts, and he has favored voluntary international deals with rich nations providing cleaner technologies to poorer nations. Some nations fear Bush’s plan will rival rather than reinforce U.N. efforts, but Bush in his May 2007 speech agreed to fold his own climate plans into the U.N. framework.	
2007			
	May 31, 2007	Bush said he wanted 15 top emitters of greenhouse gases—which are led by the United States, China, Russia and India—to “work together to develop a long-term global goal to reduce greenhouse gasses.”	
	June 6-8, 2007	Leaders of the group of eight leading industrialized nations met in Germany. German Chancellor Angela Merkel has been pushing for a more ambitious deal and says the world needs to cut emissions by 50 percent below 1990 levels by 2050.	
	August 27-31, 2007	Senior government officials meet in Vienna for talks about Kyoto and a new round of broader dialogue.	
	September 24, 2007	The United Nations holds a “high-level” meeting in New York about climate change.	
	September 27-28, 2007	Bush invites the European Union, the United Nations and 11 countries to the September 27-28 meeting in Washington to work toward setting a long-term goal by 2008 to cut emissions. China and India are both invited to the September conference, together with Japan, Canada, Brazil, South Korea, Mexico, Russia, Australia, Indonesia and South Africa. The EU delegation includes representatives from France, Germany, Italy and Britain.	
	December 3-14, 2007	Environment ministers from around the world meet in Bali, Indonesia. It will be a first meeting at which formal U.N. talks on a new post-Kyoto deal could be launched. The conference culminated in the adoption of the Bali Road Map which includes the Bali Action Plan. The Bali Action Plan charts the course for a new negotiating process designed to address climate change. It has a 2009 deadline.	
2008			
	December 1, 2008	Bush proposes top emitters agree to cuts by the end of 2008.	
	December 1, 2008	World environment ministers meet again in Poland.	
2009			
	January 20, 2009	U.S. President Bush leaves office.	
	January 20, 2009	New U.S. President.	
	December 1, 2009	Environment Ministers meet in Denmark. Many nations hope a launch of negotiations in Bali in 2007 would mean a U.N. deal could be signed at the Copenhagen talks.	Two years to negotiate any new pact, as it took two years from 1995-97 to negotiate Kyoto
2010			
2011			A further two years for ratification of any new pact, as it took eight years to ratify Kyoto before the deal entered into force in 2005
2012			
	December 31, 2012	First period of Kyoto runs out.	
2013			
	January 1, 2013	Second period of Kyoto begins or is superseded by new U.N. Pact.	



National Association of Insurance Commissioners

Headquartered in Kansas City, Mo., the National Association of Insurance Commissioners (NAIC) is a voluntary organization of the chief insurance regulatory officials of the 50 states, the District of Columbia and five U.S. territories. The NAIC's overriding objective is to assist state insurance regulators in protecting consumers and helping maintain the financial stability of the insurance industry by offering financial, actuarial, legal, computer, research, market conduct and economic expertise.

Formed in 1871, the NAIC is the oldest association of state officials. For more than 135 years, state-based insurance supervision has served the needs of consumers, industry and the business of insurance at-large by ensuring hands-on, frontline protection for consumers, while providing insurers the uniform platforms and coordinated systems they need to compete effectively in an ever-changing marketplace.

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