



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 this process, the NAIC has formed the Climate Change and Global Warming (EX) Task Force. 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, so 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 when considering insurer financial stability is heavily dependant 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 in 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 like 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.

58
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116

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 investment 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 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 posed by climate change to insurer solvency. Domestic regulators should begin a dialogue on an insurer's financial exposure to loss resulting from a catastrophes 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.

117
118 Working together, regulators will need to develop new solvency regulatory tools to meet the challenges of climate change.
119 For example, regulators may consider a requirement of a statement of catastrophe or extreme weather risk by the enterprise
120 risk manager, actuary, and risk modeler. The development of an information collection tool which prompts an insurer to
121 analyze and disclose climate risks faced by the insurer and potential responses of the insurer to those risks would allow
122 regulators, investors and consumers to evaluate the insurers' climate change knowledge and planning. Such an information
123 collection tool should provide information to the public but provide insurers the opportunity to keep legitimate trade secret
124 information confidential. Given that climate change is global, the number of catastrophic losses is increasing internationally,
125 and some emerging economies are generating increased properties and increased values, regulators must begin to consider
126 whether there will be enough capital in the international marketplace to finance the risk. Also recognizing the need to
127 recognize that some US domiciled insurers may have cross-border or international insurance exposure in emerging markets
128 where climate change influenced risks are high and preparedness is low. States should also strongly consider catastrophe
129 reserving as means to encourage sound enterprise risk management to help ensure adequate capital is available for
130 catastrophic loss potential impacted by climate change.

131
132 Alternative risk transfer vehicles need to be explored and this industry needs to improve its educational outreach. Regulators
133 could assist with the development of common terminology and encourage the development of a more transparent
134 marketplace. Although alternative risk transfer methods are not necessarily applicable to addressing the full spectrum of
135 climate change risk exposure, especially the impacts from smaller scale, diffuse, and gradual events.

136 137 **Property and Casualty Insurer Loss Prevention and Mitigation Issues**

138
139 This section will address how insurers can participate in mitigation of climate change. The Federal Emergency Management
140 Agency (FEMA) has defined mitigation of natural catastrophes as the "ongoing effort to lessen the impact disasters have on
141 people's lives and property through damage prevention." When addressing climate change, the term "mitigation" would also
142 include actions to bring about emissions reductions. Coordinating measures that reduce vulnerabilities and stabilize climate
143 changes are principles that can guide public policy, private investment, and insurance practices.¹

144
145 The Intergovernmental Panel on Climate Change predicts that flooding, fire, tropical storms, and other extreme weather
146 events will increase in North America due to global warming and climate change.² This increase, coupled with rising
147 property values, can be expected to significantly increase claims paid by property and casualty insurers. As such, insurers
148 have a vested interest in confronting and mitigating the challenges posed by climate change.

149
150 Property and casualty insurers have a unique opportunity to reassess how they approach their business. There is a void of
151 solid risk management information for most businesses and families related to how climate change will affect their lives or
152 business operations. This presents an opportunity to insurers to refine their business plans. Regulators have a role to play in
153 encouraging insurers to utilize sound risk management principles. Regulators and insurers should seek ways to educate
154 businesses and families on how to reduce exposures to loss so insurance coverage is affordable and available. Declining to
155 write coverage or reducing coverage should be a last option and based on sound risk management principles. Insurers and
156 reinsurers have actively been involved in promoting loss mitigation through efforts such as the Institute for Business and
157 Home Safety (IBHS), the Federal Alliance for Safe Homes (FLASH) and the upcoming industry sponsored attraction at
158 Disney's INNOVATIONS at Epcot, entitled "StormStruck: The Tale of Two Homes," to name a few. Businesses and
159 families would be well served by broader dissemination of loss mitigation information. As a part of risk assessment,
160 regulators may also consider global capital and enterprise risk management by insurers, taking into account capital adequacy,
161 assessment of internal controls, recognition of qualified internal capital models, and effective corporate governance.

162
163 One example of the ongoing industry efforts to study and advance loss mitigation is StormStruck. RenaissanceRe,
164 WeatherPredict Consulting, FLASH, State Farm, and Simpson Strong plan to launch this attraction in late summer 2008 at
165 INNOVENTIONS at Epcot at the Walt Disney World Resort. The attraction will combine experiencing what it feels like to
166 be in severe weather with learning about the associated risks and ways to protect homes. It is intended to raise public
167 awareness about the latest risk mitigation research and recommendations. (See RenaissanceRe's 2007 Annual Report
168 discussing mitigation activities at <http://www.sec.gov/Archives/edgar/data/913144/000119312508075337/dars.htm>, pages
169 14-17.)

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>.

170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217

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 ISO’s 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 a 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.

Additionally, individual states need to develop and enforce appropriate statewide building codes. According to the Institute for Business and Home Safety (IBHS), twelve states have no state residential building codes and four states have no commercial building codes⁷.

³ Ross, Christina, Mills, Evan and Hecht, Sean B., “Limiting Liability in the Greenhouse: Insurance Risk-Management Strategies in the Context of Global Climate-Change.” *Stanford Environmental Law Journal*, Vol. 26A, p.316, 2007 Available at SSRN: <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>.

⁷ http://www.ibhs.org/building_codes/

218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260

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 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 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 also 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 US 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 wildland-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 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.

Impact on Policyholders

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. Available at http://www.hcn.org/servlets/hcn.Article?article_id=15571.

¹¹ Saulny, Susan, "Development Rises on St. Louis Area Flood Plains." New York Times, May 15, 2007. Available at <http://www.nytimes.com/2007/05/15/us/15flood.html?ex=1187928000&en=f24ac515cd465d0d&ei=5070>; Hoge, Patrick, "Floodplain Development Questioned." San Francisco Chronicle, January 30, 2006. Available at <http://sfgate.com/cgi-bin/article.cgi?f=/c/a/2006/01/30/MNGO7GVLK41.DTL&hw=delta%2Blevee&sn=001&sc=1000%20>.

¹² Chu, Cathy, "Katrina Renews Calls for Change in Rebuilding Rules." USA Today, August 21, 2007. Available at http://www.usatoday.com/money/economy/housing/2007-08-21-repeat-losses_N.htm.

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

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

267
268 Insurers facing the near certainty of losses which exceed premium for coastal regions may be limited in the magnitude of
269 their rate increases on a temporary basis. Recent experience in the southeastern and northeastern U.S. has shown that
270 changing expectations of the long-run risk profiles have made it difficult for insurers to price their products on an actuarially
271 sound basis. Likewise policyholders face uncertainty as to the real risk and hence cost of building in a particular location. As
272 obtaining financing for real estate acquisition requires property insurance protection, further economic development of
273 coastal regions, western forests, and other environmentally fragile locations, will require a commitment to understand and
274 mitigate the risk that arises as a result of global warming. Before insurance coverage becomes unaffordable or unavailable--
275 consumers, politicians, realtors, builders, and other interested stakeholders--will demand regulators and insurers become even
276 more involved in understanding changes in underlying risks and communicating that understanding to policyholders and the
277 public. Regulators and the NAIC should work with the insurance industry to educate these groups about the increased risks
278 associated with climate change and the associated factors that contribute to the cost of insurance. Insurers have long
279 understood that the only way to achieve sustained stability or reduction in insurance costs is to reduce the level of risk. If
280 insurance costs are to be controlled, policyholders need to become active partners in this effort, which means that insurers
281 must continue to push in this direction.

282 283 **Post-Event Demand Surge**

284
285 Insurers and risk modelers can also address problems that frequently complicate claims after a natural catastrophe. One such
286 problem is the post event shortage of contractors and building supplies. Following Hurricane Katrina, capacity constraints for
287 labor and materials drove price fluctuations and substantially increased reconstruction costs. This demand surge, which has
288 been observed in previous large scale catastrophes, could become one of the biggest drivers of insured losses in years to
289 come.¹⁴

290 291 **Post-Event Living Expense Increases**

292
293 Another problem that increases claims after a natural catastrophe is the spike in living expenses as the demand for habitable
294 residences and consumer goods surges. As with the demand surge in construction materials and labor, this demand surge
295 increases insurers' payouts for additional living expenses. There are several ways insurers can lessen the impact of post-event
296 living expense increases. Insurers can minimize coverage problems caused by maintaining insufficient amounts of insurance
297 by encouraging insurance producers to review property coverage amounts with their policyholders. Insurers and regulators
298 can also support legislation encouraging tax free disaster savings accounts, which can help defray the rise in post-event living
299 prices. Additionally, proactive mitigation of existing vulnerable housing and non-residential properties can make a
300 tremendous difference in reducing the demand for temporary accommodations following an event.

301 302 **Business Interruption Problems with Catastrophic Events**

303
304 Most consequences of climate change affect more than one line of insurance, including the line of business interruption. For
305 instance, extreme heat events have caused simultaneous insurance losses ranging from loss of life, to wildfire-driven property
306 loss, to crop damages, to electric power plant shutdowns, to associated business interruptions.¹⁵ "Losses due to the disruption
307 of business operations typically range from 20 to 40 percent of claims resulting from hurricanes. Other weather-related
308 triggers for business-interruption claims include lightning, flood, and wildfire."¹⁶ Visibility problems during wildfires in
309 Malaysia forced the closing of the country's largest port and many businesses.¹⁷

310 311 **Discounts and Credits as Incentives to use Green Building Materials after Loss**

312

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

¹⁵ Mills, Evan, Roth, Richard, Lecomte, Eugene, "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 *USA Today*. August 11, 2005. "Malaysia Imposes Emergency as Haze Turns Air Hazardous," http://www.usatoday.com/news/world/2005-08-11-malaysiahaze_x.htm?csp=36

313 Some insurers like AIG and Fireman’s, Fund have developed new products that provide coverage for green buildings.
314 Fireman’s Fund Insurance Company has introduced Certified Green Building Replacement and Green Upgrade coverage, a
315 new coverage specifically for green commercial buildings that addresses the unique risks that come along with sustainable
316 building practices.¹⁸ This offering of coverage protects buildings that are green-certified as well as buildings and facilities
317 whose owners would like to capture green benefits. The coverage for LEED (Leadership in Energy and Environmental
318 Design) certified buildings, offers a discount due to lower risk. Conventional insurance policies only cover the cost to restore
319 a building to its original condition. Under Fireman’s Fund Green Building Replacement and Green Upgrade coverage,
320 commercial property owners and managers are able to rebuild and replace with green alternatives such as non-toxic, low-odor
321 paints and carpeting, energy star-rated electrical equipment, interior lighting systems that meet LEED or Green Globe
322 requirements, water efficient interior plumbing and energy Star-qualified roof and insulation materials.
323

324 Fireman’s Fund has worked closely with the U.S. Green Building Council’s (USGBC) LEED program as well as the Green
325 Building Initiative’s (GBI) Green Globes program to ensure that its coverage and upgrade options align with the industry’s
326 major green certification processes. As part of the product, Fireman’s Fund will pay for the application process for the
327 building to become certified by these organizations.
328

329 Insurers can encourage property owners to use mitigating and “green” building materials in repairs through the use of
330 discounts in their homeowner/commercial property insurance products. Currently, discounts are becoming available for
331 homeowners who install solar systems to replace their traditional electricity service. Insurers can also provide discounts for
332 use of recycled, energy efficient, water efficient, and green manufactured building materials.¹⁹ By offering discounts in
333 insurance, insurers may not only provide financial incentives for the use but may also legitimize the use of green building
334 materials to skeptical uneducated consumers.
335

336 **Use of Tiered Rating Plans To Encourage the Use of Low Emissions Vehicles**

337
338 Insurers may offer innovative products that can further encourage consumer mitigation of global warming by offering
339 mileage-based automobile insurance or actuarially justified premium discounts to encourage the use of low emission
340 vehicles, fuel efficient non-hybrid and alternative fuel vehicles. Insurers can further encourage reduction of greenhouse gas
341 emissions, as well as exposure to loss, by providing incentives for consumers to drive less. An effective way to do so would
342 be to give much greater weight to the miles that policyholders drive as a rating factor. Insurers can measure the amount that
343 their policyholders drive in a variety of ways. Indeed, at least one insurer (Progressive) already makes use of Global
344 Positioning Satellite (GPS) technology for some policyholders. Additionally, pay-as-you-drive is broadly available in Europe,
345 Israel and parts of Asia. Travelers Group, the second largest writer of U.S. auto and homeowners insurance through
346 independent agents, offers a 10 percent discount on auto insurance for hybrid owners. Travelers is the first auto insurance
347 company to begin implementing a discount nationally.²⁰ Farmers Insurance Group also offers an insurance discount, up to 10
348 percent, for customers who own a hybrid or alternative-fuel vehicle. Progressive has similar incentives. In addition, there are
349 a variety of partnerships, such as one in Seattle, that are exploring the impact of these new vehicles. Insurers already back the
350 Corporate Average Fuel Economy (CAFE) standards, which improve fuel economy without compromising safety through
351 reduced vehicle weight.²¹ CAFÉ standards will lower GHG emissions and should help reduce the impact of global warming
352 and the resultant climate change in the future.
353

354 As these, and other new technologies, are introduced insurers will assess their risk characteristics to develop actuarially
355 sound premiums. Regulators must be mindful that whenever a new technology is introduced its risk characteristics are almost
356 by definition unknown. While some will prove successful some will be proved unworkable. In this situation pricing is going
357 to be more of an art than a science.
358

359 **Research and Education**

360
361 In keeping with their history in developing fire and vehicle safety technologies, insurers can play a role in bringing to market
362 new technologies that help increase consumers’ resilience to climate change impacts as well as curbing greenhouse gas
363 emissions.²²

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

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

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

²¹ Beattie, J. 2002. “Auto Insurers Back new CAFE Plan.” The Energy Daily, 30 (17):1.

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

364

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

371

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

378

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

383

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

387

388 **Property and Casualty Insurer Market Issues**

389

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

397

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

404

405 As part of adjusting to these new realities, insurers, policyholders, and regulators will need to consider whether certain types
406 of property loss are simply uninsurable. For example, insurers will need to consider such issues as whether consequential
407 losses triggered by a loss of water, in the event of a severe drought, are insurable in the first place. Increasing drought
408 conditions may lead some to ask the same question regarding whether whole regions subject to brush, prairie, and forest fires
409 are able to be insured against fire. Insurance regulators will need to consider whether insurers can carve out of the insurance
410 market place products or hazards for which there is a public need, without imperiling the role of the insurance industry in the
411 private sector economy. If current residual market mechanisms to pick up the discarded risks from the private market is an
412 inadequate response to these issues, insurers and regulators will need to consider whether severe restrictions and limitations
413 may result in a public response calling for new governmental insurance plans to cover losses that private insurers are
414 unwilling to underwrite.

415

416 Property and casualty insurers need to be mindful that when they abandoned markets or make policy provisions too
417 restrictive, people and businesses seek other alternatives. For example, when private insurers shied away from writing
418 product liability insurance, the Product Liability Risk Retention Act of 1982 was adopted by Congress. In 1985 the law was

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.

419 changed to allow risk retention groups to sell other forms of commercial liability insurance. Proponents of risk retention
420 groups are encouraging Congress to expand the Act to allow risk retention groups to sell property insurance. Once markets
421 move to obtain alternative coverage, they are unlikely to return to the traditional voluntary markets.
422

423 **LIFE INSURER ISSUES**

424
425 While property and casualty insurers may face the greatest impact of climate change-related catastrophic events, life insurers
426 face challenges as well. Life insurers manage products which American families rely on for financial security during
427 retirement and in the event of premature death. Because life insurers hold long-term assets and enter into long-term contracts,
428 actions taken today may have significant implications for future solvency. Life insurers have an obligation to their
429 policyholders to fulfill all contracts, and must be prudent when managing investments and issuing policies. Not preparing for
430 the possible effects of climate change may indeed have serious repercussions for both life insurers and policyholders.
431

432 Unlike many other industries, the primary business of life insurers is to underwrite and *manage* long-term risk, including
433 mortality-linked risk. Life insurers pool, diversify, and hedge their risk in preparation for catastrophic events and any
434 resulting change in mortality. In order to be prepared for climate change, life insurers they need to keep abreast of changes in
435 the frequency and/or severity of weather-related events, and should try to determine the degree to which an individual
436 catastrophic event can be attributed to climate change as opposed to other factors. Life insurers should also monitor scientific
437 advances in forecasting, storm tracking, and communications; improvements in federal, state, and local disaster mitigation
438 and management; and changes in public awareness and attitudes, all of which may *lower* fatalities associated with
439 catastrophic events. As the public becomes aware of the danger posed by extreme weather, it will be more pro-active and will
440 be more likely to follow mandatory and voluntary evacuation orders or take other life-saving actions. Paradoxically, it is
441 possible that increased public awareness, coupled with technological and logistical advances, may ultimately result in an
442 overall *reduction* in mortality related to catastrophic events, even in an environment of climate change.²⁵ Life insurers must
443 consider all these variables when anticipating future changes in mortality resulting from the possible effects of climate
444 change.
445

446 Like other industries, life insurers should also prepare for the impact of climate change on investments, and should be
447 particularly mindful of investments related to real estate. .²⁶ Since they are in the business of managing long-term financial
448 risk, this is something they currently do and the expectation is that this will continue. Climate change is one of numerous risk
449 factors considered by life insurers when they make investment choices, with the impact of risk varying according to the type
450 of investment made. .
451

452 Life insurers should be particularly mindful of real estate investments. Currently, life insurers hold 0.7 percent of their assets
453 in real estate and 6.5 percent in mortgages. Of their total mortgage holdings, 21.4 percent are for properties located in coastal
454 states which are the most likely to experience a direct strike from a hurricane (i.e. 1.4 percent of all investment holdings),
455 though not all of these properties are sufficiently close to the coastline to be affected.²⁷ Predictions of the rate at which the
456 frequency and severity of climate change-related weather events will increase are still unreliable, but as scientifically and
457 statistically sound techniques are developed, life insurers will be better able to estimate the precise impact on the lives they
458 insure and the investments they hold and will adjust accordingly.
459

460 **HEALTH INSURER ISSUES**

461
462 At a very basic level, human health will be impacted by climate change in ways that are not yet fully understood nor
463 anticipated. There are a host of possible events and associated consequences-- some of which will compound already existing
464 health issues such as Asthma-- that will require regulators to better understand and evaluate their effect on public health and
465 the health insurance industry²⁸. Among the possible events are:

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 ten most deadly hurricanes that made landfall in the United States, nine occurred before 1958 and eight occurred before 1936 (from: Blake, Eric S.; Rappaport, Edward N.; Landsea, Christopher W.; NHC Miami; "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).

²⁶ According to ACLI's Mortgage Loan Portfolio Profile, 2008; and ACLI's 2007 Life Insurers Fact Book, life insurers currently 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 which are the most likely to experience a direct strike from a hurricane (Alabama, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas), though not all of these properties are sufficiently close to the coastline to be affected.

²⁷
²⁸ 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. Committee on Environment and Public Works. United States Senate. October 23, 2007

466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519

- 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 included protracted mental health issues. Only time will tell if there are significant long term consequences;
- Health issues associated with heat waves. Again, 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;²⁹ and
- 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.³⁰

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 charge 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); and
- Changing policy terms and conditions to more closely match insurance products offered in the voluntary property insurance market for other perils.

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.

²⁹ Mills, Evan; Roth, Richard; Lecomte, Eugene, “Availability and Affordability of Insurance Under Climate Change.” Commissioned by Ceres, December 2005, p.28.

³⁰ Ibid.

520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565

Disaster Mitigation Grants and Loans

While land-use decisions and building codes can reduce property losses for properties in areas where we develop in the future, existing structures in high-risk areas still present a challenge. For instance, according to a January 2007 study by AIR Worldwide³¹, the insured value of properties in the hurricane prone US 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, 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 US. 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 and Christopher Dodd 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) very likely to be significantly contributing to global warming and the resultant climate change³².

As a country, the total US GHG emissions have increased 16% since 1990³³ and are slated to increase by 50% by 2020³⁴. Recognizing a similar trend, many developed countries throughout the world have engaged in mitigation strategies and mechanisms to reduce their GHG emissions. The US government should also establish a national strategy to reduce US GHG emissions following the lead of the Regional Greenhouse Gas Initiative³⁵ and the Western Regional Climate Action Initiative³⁶. 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.

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

³¹ http://www.iso.com/index.php?option=com_content&task=view&id=2366&Itemid=211

³² http://unfccc.int/essential_background/feeling_the_heat/items/2904.php

³³ <http://www.epa.gov/climatechange/emissions/downloads/2007GHGFastFacts.pdf>

³⁴ http://www.ecy.wa.gov/climatechange/CATdocs/033007mtg1_presentation.ppt#21

³⁵ <http://www.rggi.org/about.htm>

³⁶ http://www.governor.wa.gov/news/2007-02-26_WesternClimateAgreementFinal.pdf

566 officials to coordinate efforts to combat the problems. The Federal government should consider creating an agency or sub-
567 agency responsible to address climate change in a similar fashion. This new entity could create a national strategy, help
568 implement “best climate practices”, and act as a liaison between governments and business as we mitigate and adapt to
569 climate change.

570
571 **Encourage or Mandate Enhanced Disclosure**

572
573 **Disclosure of Climate Risk**

574
575 Over the past few years the issue of disclosure has become more focused. This is in part due to the more settled view that
576 climate change or at least climate variability should be considered as part of the risk environment. In 2000 the Securities and
577 Exchange Commission (SEC) incorporated climate change reporting in filings of automobile, manufacturing, integrated oil &
578 gas, insurance, petrochemicals, and utilities companies. By 2005 the response rate had risen to 49%.³⁷ Only 19% of insurance
579 companies filing with the SEC have complied with the requirement.³⁸ NOTE: NEED TO ADD 2007 DATA.

580
581 Under SEC Regulation S-K and in particular Item 101—Description of Business, and Item 303—Management’s Discussion
582 and Analysis of Financial Condition and Results of Operations, companies that file with the SEC may have already begun
583 disclosing the impact they expect from climate risk. However, three developments in 2007 would seem to increase the
584 concern that any disclosures are accurate reflections of the changing risk landscape.

585
586 The first force of change is again the growing consensus around issues of causation and climate variability as exemplified by
587 the Intergovernmental Panel on Climate Change’s April 6, 2007 report.

588
589 The second force is the April 2, 2007 U.S. Supreme Court ruling in *Massachusetts v EPA* which found that greenhouse gases
590 are pollutants under the Clean Air Act, and thus the EPA had improperly declined to regulate new-vehicle emissions
591 standards. At the Federal level this decision and increased interest by entities such as the Senate Committee on Banking,
592 Housing, and Urban Affairs indicate that climate change is growing in force as a political concern.

593
594 The third force is exemplified by the January 1, 2007 effective date for California’s Global Warming Solutions Act of 2006.
595 This Act will seek to reduce the state’s greenhouse gas emissions to 1990 levels by 2020. It is now very apparent that
596 activities around climate change are strongest at the state level in the U.S.

597
598 These forces, scientific consensus, U.S. Supreme Court recognition, and major state initiatives, have changed the risk profile
599 for U.S. businesses, including insurers. As regulators of insurance, commissioners are now faced with selecting the oversight
600 regime for this period of enhanced interest in climate risk. Fortunately, they are not without resources.

601
602 **Currently Required Disclosure**

603
604 While regulators are rightly discussing climate risk assessment it is important to remember that some disclosure is already
605 required under current reporting standards. Indeed, climate risk is inherent in the insurance market, it is never zero. Where
606 climate risk poses a material risk, US listed firms must disclose those risks since they are bound to disclose all material
607 information to their shareholders. In December 2007 Senators Dodd and Reed noted in a letter to SEC Chairman Cox that
608 ‘disclosure is required under Item 303 of Regulation S-K, if the registrant determines that the consequences of climate
609 change or governmental regulation of greenhouse emissions would reasonably be expected to have a material effect on its
610 business, results of operations, or financial condition.’ Thus, for some companies, regulators are not discussing the
611 commencement of disclosure but rather the enforcement and/or enhancement of current disclosure requirements.

³⁷ Fifth Survey of Climate Change Disclosure in SEC Filings of Automobile, Insurance, Oil & Gas, Petrochemical, and Utilities Companies. Michelle Chan-Fishel, Friends of the Earth – US. October 2006

³⁸ 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), SAFECO Corporation (US).

613 SEC requirements are at best a blunt instrument for climate risk disclosure. Apart from SEC requirements insurance
614 regulators regularly receive Management Discussion reporting from all licensed insurers as part of the annual financial
615 disclosure.³⁹ Like SEC requirements this discussion may not reach the level of disclosure that some regulators may seek.
616 Nevertheless for most insurance entities regulators are discussing the enforcement and/or enhancement of current disclosure.
617 It is important to note that regulators and insurers might disagree over whether a particular risk is material. Since the period
618 and course of climate change is uncertain regulators will no doubt be engaged in discussions with insurers if they have vastly
619 different opinions about materiality. Refinement of disclosure requirements related to climate change might clarify the level
620 of disclosure expected by insurance regulators.

621 622 **Coverage of Disclosure** 623

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

- 630
- 631 • Investors, particularly institutional investors and organized groups of individual investors;
- 632
- 633 • Insurer management, who may wish to be seen as leaders or who are personally interested in climate risk, or who
- 634 lead insurers which are particularly vulnerable to climate risk; and
- 635
- 636 • Professional bodies involved in establishing accounting standards, auditors, and actuaries, who as professionals may
- 637 see climate risk as poorly understood and/or measured and hence a vulnerability to the integrity of their work.
- 638

639 **Frameworks for Disclosure** 640

641 There are several frameworks that have developed for disclosure of climate risk and some had insurer participation. The
642 response rate to the Carbon Disclosure Project Survey of U.S. S&P 500 Insurers was 68% in 2007, suggesting that disclosure
643 requirements are not onerous.⁴⁰ See Table 1 for examples. Regulators should be encouraged by the action of the World
644 Economic Forum [January 2007] in forming the Climate Disclosure Standards Board (CDSB). This group will attempt to
645 harmonize the core measures of reporting groups and establish a generally accepted framework for climate risk-related
646 reporting by corporations. These groups are California Climate Action Registry, Carbon Disclosure Project, CERES, The
647 Climate Group, International Emissions Trading Association, World Economic Forum Global Greenhouse Gas Register, and
648 the World Resources Institute.

649

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

654

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

660 661 **NAIC Role in Disclosure** 662

663 Given the availability of reporting formats and measures, how might the NAIC best assist states in their regulatory role? The
664 NAIC has a long history in fostering uniformity and efficiency through development and adoption of regulatory frameworks
665 and reporting formats. However states are now conducting their own task forces focused on climate risk. Consequently, any
666 NAIC activities will need to mesh with the state initiatives. Moreover Federal Government interest in climate change
667 appears to be growing. As the Task Force considers disclosure the content, format and mechanism of collection need to be

³⁹ See NAIC Annual Statement Instructions, Management Discussion and Analysis Reports, Instructions.

⁴⁰ CDP5 S&P 500 Report, 2007 see www.cdproject.net

668 considered. Industries, like insurance, that span states are rightly wary of multiple reporting requirements. To be effective the
669 NAIC must move decisively yet remain open to refinement over time. The following principles may prove useful:

- 670
- 671 • Consumer protection is central to insurance regulation. With regard to climate risk consumers will require both
672 information about possible changes in risk, and confidence that their insurer has the financial capability to meet their
673 contractual commitments;
- 674
- 675 • To achieve consumer confidence regarding its solvency an insurer must be able to demonstrate that it has identified
676 sources of risk, particularly changing climate risk, assessed the relevance to its operations, and taken appropriate
677 action with regard to pricing, availability, and reserving;
- 678
- 679 • Confidence related to solvency may also extend to the quality of assets held by the insurer since some assets might
680 be adversely affected by changing climate risk. An insurer must be able to demonstrate that they have identified
681 sources of risk in their asset holdings;
- 682
- 683 • Consumers who perceive themselves to be in locations with growing climate related risks will require more and
684 more information on how they can ameliorate these risks. Here insurers are in an ideal position to inform and
685 educate and hence retain customer business; and
- 686
- 687 • Insurance consumers are best protected by a functioning competitive insurance market that delivers products that are
688 affordable and adequately cover risk that consumers face. While regulators are charged with consumer protection it
689 is vital that functioning competitive insurance markets are not compromised in the process. Thus interaction with
690 both consumer groups and industry groups will be required for a successful outcome. Insurance regulators must
691 strike a balance between two competing goals—maintenance of an appropriate level of solvency oversight with the
692 public’s perception that insurance is always too expensive. This means that regulators should recognize the
693 legitimate needs of insurers to send appropriate price signals regarding climate change risks, and that regulators
694 should show reasonable flexibility when reviewing innovative discounts, products and other incentives that promote
695 sound environmental practices.

696

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

699

700 For the “beginning steps” level this might be done in a single summit with reporting to begin in 2009-10. There are obvious
701 candidates such as the “Carbon Disclosure Project” or the SEC format. Such a summit could occur in the first quarter of
702 2009.

703

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

707 **CONCLUSION**

708

709

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

713

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

720

721 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
722 where the insurance industry is with regard to measuring the impact of climate change and global warming on its business
723 operations. There are many things discussed in the white paper that call for further concerted action by insurance regulators
724 as they consider how best to encourage or even require insurers to take thoroughly address growing climate change risk in
725 order to protect consumers and insurer solvency. Regulators also have a role to play in ensuring that environmental benefits
726 claimed by insurers are authentic and reasonably quantified to lend credibility to these efforts.

727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752

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 its 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 wellbeing as a nation. Convening a climate change summit should be the next step. The NAIC's 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 & 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 that 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 their annual report. 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 FASB	Considered accounting for emissions but in November 2003 discontinued work as 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 many developed countries, such as Europe and Australia. 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, World Resources Institute. The focus will be on the disclosure of the following key climate issues in company		January 2007

755
756

		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		
--	--	---	--	--

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.	
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			
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 will meet 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 in 2050 below 1990 levels.	
	August 27-31, 2007	Senior government officials meet in Vienna for talks about Kyoto and a new round of the broader dialogue.	
	September 24, 2007	The United Nations holds a "high level" meeting about climate change in New York.	
	September 27-28, 2007	U.S. President Bush has invited the European Union, the United Nations and 11 other 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 will include representatives from France, Germany, Italy and Britain, the U.S. official said. Sec Condi Rice will host event.	
	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. Failing that, they might agree to extend the U.N. dialogue. White House officials said after the May 2007 speech that Bush's speech had effectively kicked off the Bali talks.	
2008			
	December 1, 2008	U.S. President Bush proposes top emitters agree 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 US 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.	
2010			
2011			
2012			
	December 31, 2012	First period of Kyoto runs out.	
			Two years to negotiate any new pact as it took two years from 1995-97 to negotiate Kyoto
			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
2013			
2013	January 1, 2013	Second period of Kyoto begins or is superseded by new UN Pact.	

757
758
759

W:\Drafts\Whitepapers\Climate Change.12.doc