



CLIMATE CHANGE RISK INFORMATION DISCLOSURE, INSURANCE, THE PRIVATE SECTOR AND THE ROLE OF GOVERNMENT

Victor B. Flatt¹

The Executive Forum on Business and Climate (EFBC) concerning Climate Change Risk Information Disclosure, Insurance, the Private Sector, and the Role of Government was a one and a half day event, co-convened by the University of Chapel Hill Center for Law, Environment, Adaptation, and Resources (UNC CLEAR), the Cooperative Institute for Climate and Satellites – North Carolina (CICS-NC), the Georgetown Climate Center (GCC), and the UCLA School of Law Emmett Institute on Climate Change and the Environment. Guided by the next steps outlined in the prior EFBC forum², and prior CLEAR workshop³, this EFBC was designed to examine the desirability and utility of government (particularly insurance commissioners) requiring insurance companies to disclose risks related to climate data. In particular, this EFBC examined whether such requirements can influence the private sector to better adapt to changing climate in response to market signals set by insurance based on climate risks. This required an examination of the quality of climate risk data, how it is communicated, whether it creates economic signals related to risk, the ability of the insurance industry to pass along economic signals that will encourage the private sector's climate risk avoidance, the response of the private sector, and what policy improvements could be made to strengthen this cycle if it exists. The issues of most concern raised during the workshop were:

¹ Tom & Elizabeth Taft Distinguished Professor of Environmental Law, Director, Center for Law, Environment, Adaptation and Resources ("CLEAR"), Co-Director, North Carolina Coastal Law, Planning, and Policy Center, UNC School of Law. Major editing assistance provided by Sean Hecht, UCLA School of Law Emmett Institute on Climate Change and the Environment; Jessica Grannis, Georgetown Climate Center; and Jenny Dissen, North Carolina CICS. I would also like to acknowledge the preliminary planning assistance by Amy Pickle, Christopher Galik, and Kay Jower, from the Nicholas Institute, and Linda Rimer, from the EPA.

² Executive Forum on Business and Climate – Business Resilience (2013), accessed at <https://www.cicsnc.org/events/forum2>

³ CLEAR and CPR, The Impact of Law on Private Sector Adaptation (2012), accessed at <http://www.law.unc.edu/centers/clear/workshops/privatesector/>

- **The government has played an important role in altering market incentives to consider risk**

Most of the workshop participants had a general understanding of how both federal and state laws alter incentives in the private sector, lessening the private sector's incentive to protect from risk, including climate risk. The most important example is the National Flood Insurance Program (NFIP), which currently provides subsidized flood insurance for many at risk properties. This subsidy, along with post-disaster aid, discourages efficient expenditures to lower damage risk, particularly in coastal and floodplain areas, which are becoming more vulnerable with climate change. Similarly, many states subsidize coastal catastrophic insurance by spreading the cost of the risk of coastal damage to inland insurance consumers. Although new market-based amendments have gone into effect for the NFIP, they do not completely move the program to market rates.⁴ Another positive step is that the Obama Administration has issued an executive order clarifying that states cannot receive post-disaster aid without undertaking climate risk mitigation ahead of time.⁵ However, prior studies have shown that after disasters, the government often will provide reconstruction funding regardless of pre-disaster planning.⁶

Additionally, while there was agreement that these incentives are maladaptive, many of the workshop participants also noted that a sudden switch to market rates might particularly hurt the poor and vulnerable in some situations.

- **Uses of risk information need to be clarified**

The original insurance climate survey discussed in the workshop was created based on insurance commissioner authority to collect information relevant to the solvency of insurance companies doing business in a state.⁷ Many workshop participants believe that private sector insurance providers are on sound financial footing with an incentive to protect their own interests in the face of climate change. That led to a discussion of

⁴ Trey Garrison, *Flood Insurance Rate Hike Delay Becomes Law*, Housing Wire, March 21, 2014 (available at <http://www.housingwire.com/articles/29400-flood-insurance-rate-hike-delay-becomes-law>) (last accessed on May 22, 2015).

⁵ Katherine Bagley, *FEMA to States: No Climate Plan. No Money*, Inside Climate News, March 20, 2015, available at <http://insideclimatenews.org/news/18032015/fema-states-no-climate-planning-no-money> (last accessed on May 18, 2015).

⁶ Glavovic, Bruce and Gavin Smith. 2014. *Adapting to Climate Change: Lessons from Natural Hazards Planning*. New York: Springer.

⁷ National Association of Insurance Commissioners, *The Potential Impact of Climate Change on Insurance Regulation 1* (2008), available at http://www.naic.org/documents/cipr_potential_impact_climate_change.pdf (last referenced on May 22, 2015).

whether the current survey serves a purpose or simply adds cost. Other participants focused on the secondary impacts of risk disclosure on insurance customers. Some asked whether clearly identifying climate risk will encourage insurance companies to price products to provide policyholders with an economic incentive for adaptive behavior.

It is important to have a common understanding of the purpose of any insurance risk disclosure mandated by insurance commissioners. If an objective of collecting information about insurers' climate risk is to influence the private sector through insurance company understanding of risk, then the particular risk disclosure questions in the questionnaire may not be well-tailored to that purpose. While some workshop participants opined that risk disclosure data in any form should have already influenced the private sector to the extent possible, others believed that disaggregating climate risk data or requiring specific breakdowns might lead to better pass through of risk reduction market signals to the private sector. Because the existing survey is largely focused on carbon emissions-related risk rather than vulnerability to climate change's impacts, it may be poorly-suited for encouraging adaptation efforts. Of course, this pass-through is also mediated by the insurance regulation itself. Insurance commissioners can, where legally permissible, allow rate increases, or consider requiring a change in the risk profile that determines premiums.

- **Metrics**

A related point of discussion concerns the best metrics for disclosing climate risk. If risk is to be disclosed, it may be desirable to specify what risks and determine if acceptable metrics exist in order to calculate such risks. Thus, instead of an overall risk calculation, risk could be calculated for specific occurrences (such as severe rainstorms, hurricanes, drought, and other causes of loss). The workshop participants all appreciated that climate models predict some catastrophic events better than others. Emphasis on breaking out some of the risk metrics could encourage clearer pass through of specific climate risks and encourage better data where needed. Many existing metrics focus on carbon emissions-related risk, rather than on vulnerability to climate change's impacts.

- **Temporal mismatch**

There was much discussion during the workshop about how climate risk is most predictable over long time scales of a decade or far longer. Most insurance products, by contrast, are for yearly contracts with renewal (though rates can be increased annually). The workshop participants questioned whether risk pass-through to the insured would be more accurate if the business product's temporal scale aligned better with the insured risks. This could be with longer term contracts or insurance contracts that can be

automatically renewed and/or pass with property (such as termite insurance).⁸ Related questions concern whether such products are feasible and external encouragement or incenting (such as through insurance commissioners) is a viable way of securing such products. One school of thought is that new products that price risk would have already been offered by insurance companies if they were economically feasible. The other, however, is that these products have not been offered because they have not been seen as favorable by insurance commissioners or the public.

Similarly, the possibility of private parties providing resiliency measures in return for lower insurance premiums on an aggregate basis for profit (similar to aggregation of solar rooftop panels by one company) was also discussed, with questions about whether such aggregation could occur without direct changes in insurance laws and regulations in most states.

A larger question is whether the scale of at least some climate risks (such as greater than 50 years) is simply too long to be able to affect private sector behavior at all. In general most businesses rarely go outside of a 10 year time horizon for planning. An except was noted in the decisions regarding capital construction of large power plants, which often involve consideration of economic and other factors over a 50 year time horizon.

- **Role of state insurance commissioners**

Much of the workshop concerned the interaction between the insurance commissioners and the companies that they regulate. The current model of application and approval of rates may not be well-suited to provide risk signals to the private sector to promote adaptive behavior.⁹ Commissioners may be able to take on more proactive roles in mediating the insurance products offered in their state by balancing risk-based pricing with affordability, where state law would allow it. One example might be for insurance commissioners to approve lower premiums in situations in which policy holders agree to utilize building and safety standards proven to lower claim payout.

States and insurance commissioners should also obtain climate data directly from reliable and credible sources, and should develop and implement the capacity to understand this information and use it effectively.

⁸ <http://www.ultimatetermitecontrol.com/termite-insurance/> (last accessed on May 22, 2015).

⁹ Sean Hecht, *Climate Change and the Transformation of Risk: Insurance Matters*, 55 UCLA L. Rev. 1559, 1585 (2008)

I. Introduction and Background on Issue of Insurance Risk Disclosure and Its Effect on Private Sector Adaptive Behavior

Climate change remains a politicized topic in the United States, but the overwhelming scientific consensus is that human actions are driving a worldwide warming of the average global temperature.¹⁰ This warming, in turn, has created other effects on climate, including more intense precipitation and other violent weather events, sea level rise, loss of water storage in glacier and snowpack, droughts, forest fires, and heat waves.¹¹ The United States Third National Climate Assessment, released in May of 2014, specifically noted climatic changes at the national and regional level in the United States.¹²

While much climate change negotiation and discussion center around trying to reduce human impact on the climate, changes have already occurred and will continue to occur, even if all new anthropogenic climate forcing were to cease.¹³ Therefore, adapting to climate change is one of the great challenges that our country and world will face. As noted in a prior research workshop and briefing paper from 2012, The Center for Law, Environment, Adaptation, and Resources (CLEAR) and the Center for Progressive Reform (CPR) have noted that much climate change adaptation will occur in the private sector, as businesses and individuals seek to lessen the physical and economic impact of climate changes in ways that are cost effective to them.¹⁴ In fact, as the vast majority of land and physical infrastructure in the United States is in private ownership, successful adaptation could not occur without actions in the private sector.¹⁵

Other prior research has focused on how the private sector can obtain useful data on climate impacts that may affect them¹⁶, government barriers that may create disincentives for private

¹⁰ IPCC, Climate Change 2014: Synthesis Report 2, 7-8 (2014), https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf.

¹¹ U.S. Global Climate Change Research Program, “Key Findings,” at <http://www.globalchange.gov/publications/reports/scientific-assessments/us-impacts/key-findings> (last visited on _____)

¹² U.S. Third National Climate Assessment, “highlights,” at <http://nca2014.globalchange.gov/highlights#section-5681>

(last visited on March 25, 2015).

¹³ IPCC, Climate Change 2014: Synthesis Report Summary for Policy Makers 1, 9 (2014), accessed at www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full.pdf

¹⁴ Victor Flatt and Yee Huang, The Impact of Law on Adaptation in the Private Sector, Center for Law, Environment, Adaptation, and Resources (CLEAR) and Center for Progressive Reform (CPR) Briefing Paper, at <http://www.law.unc.edu/documents/clear/publications/adaptprivatesector.pdf> (last visited on March 25, 2014).

¹⁵ Id.

¹⁶ See, video sessions, Executive Forum on Business and Climate, Delivering a Strategic Advantage for U.S. Business, Cooperative Institute on Climate and Satellites, at <http://www.cicsnc.org/events/forum> (last visited on March 25, 2015).

sector adaptation¹⁷, the best way to communicate messages about climate change¹⁸, and what mediating role, if any, the government should retain in managing private sector adaptation.¹⁹

In one way or the other, all of these areas of research focus on how and whether information about climate risks is affecting private sector adaptation. The private sector refers to all entities outside of government regulators, from individuals to the largest corporations. It can even include government entities who are participants (as opposed to regulators) in the private markets. One strain of recent climate activism has focused on requiring private sector organizations to publicly report climate risks, both to spur information gathering in the private sector and also to send economic signals to affected parties, such as investors or company shareholders. For instance, The Securities and Exchange Commission (“SEC”) has noted that climate risks can affect a publicly traded balance sheet and therefore relevant information about those risks should be reported. Specifically, the SEC requires disclosure in filings as “systematic analysis of potential risks and opportunities” related to climate change which are judged to be material.²⁰ Nonetheless, most of this information disclosure is focused on carbon emissions, and little of it focuses on climate-change related impacts, while the risks relating specifically to climate change’s impacts are likely most relevant to specific adaptation strategies. Climate related risks and opportunities can be classified in several broad categories, including physical risks, emissions, financing and underwriting risks and opportunities, regulatory risks and opportunities, litigation risks, reputational risks, and indirect risks and opportunities associated with climate change.²¹ A report on information disclosure of climate risk can be found in the CLEAR Briefing Paper, *Climate Change Risk Disclosure Current Practices and Possible Changes*.²²

Because of their direct role in managing risk generally, and mediating risk signals to the broader private sector, insurance and reinsurance companies are important actors in obtaining and analyzing climate risk information, using it in their business models, and passing on information and risk signals to the private sector.

Insurance products can be classified by the target market of the insurance. Insurance companies can insure risks to individuals and businesses for property loss, health and death, and other risks for which the companies are willing to contract. Insurance products can also be sold to other insurance companies, and these products are typically referred to as reinsurance. Reinsurance provides risk management for insurers, enabling them to spread the risks associated with large claims or correlated losses by selling the risk to reinsurers. In order to provide risk-shifting

¹⁷ Flatt and Huang, *supra* n. 3.

¹⁸ Michael P. Vandenbergh, Kaitlin T. Raimi, & Jonathan M. Gilligan, *Energy and Climate Change: A Climate Prediction Market*, 61 UCLA L. Rev. ____ (2014)

¹⁹ Flatt and Huang, *supra* n. 3.

²⁰ Commission Guidance Regarding Disclosure Related to Climate Change, 75 Fed. Reg. 6294 (Feb. 8, 2010).

²¹ *Id.*

²² Kyle Evans and Heather Payne, *Climate Change Risk Disclosure Current Practices and Possible Changes Briefing Paper*, at <http://www.law.unc.edu/centers/clear/documents/> (last visited on March 25, 2015).

products, insurance companies must have information which allows them to predict the risk of loss on average of various occurrences or events. These are referred to as actuarial tables.

With respect to risk from economic loss due to climate change impacts, insurance companies should have an incentive to investigate whether or not their profits or margins are at risk from insuring actions or property that will be affected by climate change. Most insurance companies' rates are regulated by state insurance commissioners; if their risk profile were affected by climate change, they would then need to request changes in product pricing from the relevant insurance regulator. The granting or denial of such pricing requests would then highlight and implicate what actions could be taken by the insurance consumers that would then lower the risk, and thus the price, of climate change impacts.

The National Association of Insurance Commissioners ("NAIC"), through its "climate change project," published a report in 2008 examining the impact of climate change on the insurance industry.²³ In response to this report, the NAIC adopted the "Insurer Climate Risk Disclosure Survey" in 2010.²⁴ This survey asked insurance companies about insurer strategy and preparedness with respect to climate change.²⁵

In 2011, after the wake of recent increases in catastrophic weather events, the New York State Department of Financial Services announced a joint initiative with the California Department of Insurance and the Washington State Office of the Insurance Commissioner to mandate company responses to this survey regarding climate change risks and the actions insurers are taking to address those risks.²⁶ Since 2012, other states have joined this reporting requirement.²⁷ The number of companies required to report has increased over time due to lower size thresholds.²⁸

Though the insurance commissioners' authority to request such information is related to the impact of climate change risks on the financial stability of the regulated companies, there has also been interest in whether such information is a broader reflection of climate change risk which could be used to spur adaptive behavior. If insurers recognize and can price risk more appropriately, that pricing structure can provide incentives for policyholders to reduce risk.

²³ National Association of Insurance Commissioners ("NAIC"), The Potential Impact of Climate Change on Insurance Regulation, at http://www.naic.org/documents/cipr_potential_impact_climate_change.pdf (last visited on March 25, 2015).

²⁴ NAIC, Climate Change and Risk Disclosure, at http://www.naic.org/cipr_topics/topic_climate_risk_disclosure.htm (last visited on March 25, 2015).

²⁵ Id.

²⁶ Sharlene Leurig and Dr. Andrew Dlugolecki, Insurer Climate Risk Disclosure Survey: 2012 Findings and Recommendations 4 (Ceres 2013).

²⁷ Including Connecticut, Minnesota, Illinois, Maryland, and New Mexico, Ceres Climate Risk Disclosure Survey Evolution, at _____.

²⁸ Id.

Whether such disclosure can spur this private sector adaptation served as the basis for the Workshop *Climate Change Risk Information Disclosure, Insurance, the Private Sector, and the Role of Government*, held on March 19 and 20, 2015 in Chapel Hill, North Carolina, at the University of North Carolina School of Law.

II. Session Recap

As the successor workshop to “The Impact of Adaptation Law on the Private Sector,” this workshop brought together representatives of the insurance and reinsurance industry, insurance consumers, state insurance commissioners, climate risk information providers, non-profits, think tanks, and universities²⁹ to study the impact of insurance climate risk information disclosure on private sector adaptation incentive. In particular, the workshop participants were asked to:

- Discuss the desirability of government requirements related to insurance company disclosure of climate change risk information. This includes analyzing whether such climate risk disclosure requirements will assist insurers in analyzing their own financial exposure to climate risk and whether this, in turn, will prompt insurance companies to more accurately price products to the private sector.
- Discuss the best way to require this information to accurately price climate risk and encourage good adaptation in the property sector. “Good adaptation” is defined as any action that lowers the risk of economic or health harm from changed circumstances due to climate change. This could include buildings fortified against extreme weather events or conditions, construction in different locations, warning systems, and systems to allow easier and less risky recovery from events.

In order to assist in the examination of these questions, the workshop included detailed presentations about the actions of the federal government relating to climate change adaptation, the availability and quality of data concerning climate change impacts, the use of such data in predicting and lessening climate change impacts in the private sector, what climate risk data might be helpful to the private sector, how climate change messaging is perceived by the public, and discussions of the impact of this data on insurance company behavior at this time. A detailed description of the presentations is contained in Appendix B.

The heart of the presentations was a panel discussion of insurance commissioners concerning their role in regulating insurance, their perceptions of the desirability of the insurance climate risk survey, how they saw it impacting private sector adaptation, and their recommendations for future requirements of insurance companies related to climate risk disclosure. This discussion

²⁹ A list of participants is included in Appendix A

also included a description of the function of the National Association of Insurance Commissioners and the variability of the power and influences of state commissioners dependent on their specific laws and regulations governing how commissioners come to office and their enumerated powers.

State insurance commissioners may be regulated or appointed, partisan or non-partisan, and therefore face different political pressures in terms of the performance of their jobs. What the commissioners have in common is their charge to provide affordable insurance to persons in the state. This sets up the commissioners as the gatekeepers for which policies can be offered in a state and at what price. Because of their duty to the “public good” generally or because of specific legislative requirements, in approving rates to ensure the availability of affordable insurance, insurance product pricing may not always reflect the actuarial risk associated with providing the product. For instance, in encouraging a private insurance company to offer property insurance policies in high risk coastal areas, insurance commissioners of state legislatures may allow higher rates than actuarially necessary to be imposed in other geographic locations or insurance products. Thus, the general “public good” requirement is at the heart of why the private sector may not receive the proper price signals to protect themselves from climate change risk, such as from higher frequency of severe weather events, or rising sea levels. In the long term, as climate change risks increase, this may require higher and higher rates generally without allowing for discounts for risk reduction activities in the private sector. This interface of price regulation and product offering is where the insurance commissioners might be able to mediate product offerings to lessen risk and price.

This possibility is at the heart of the original notion of the NAIC to require that insurance companies disclose “climate risk.” Both panelists believed that this requirement was helpful in sending better price signals to insurance companies and their customers, though there was discussion that the purpose of the survey should be clarified and that the form of the survey might therefore be improved.

The presentations also included analysis and strong critiques of the impact of legislative and insurance commissioner policies on climate risk signals. One academic expert on insurance products noted that while insurance companies continue to assert the need for their market to be able to produce correct price signals, that outside of some reinsurance companies, not much progress had been made. Additionally, the federal government’s intervention in the flood insurance market and in disaster recovery has strongly muted cost effective climate change adaptation in the private sector. This fact prompted much debate about whether or not climate

risk information disclosure requirements can accomplish any of the goals hoped for by the insurance commissioners.

III. Breakout Group Discussion

Using small group discussion, workshop participants were tasked with discussing the overall questions of whether current insurance survey disclosure did or could impact private sector climate risk reduction, and if the survey instrument could be improved or whether there were other, better ways to utilize insurance climate risk analysis to encourage better private sector adaptation.³⁰

The results of these discussions highlighted agreement on several key points:

- **There are challenges with time-scale:** Insurance products are generally purchased on an annual basis, and rates can fluctuate annually based upon historic losses. Climate models evaluate changes over much longer time horizons, such as 7, 20 30, 50, or 100 years. If the goal is to get insurance companies and the private sector to take a longer-term view of climate change risks over a more appropriate (say 30-year) time frame, this may require a possible shift in the business model of insurance.
- **There are challenges with climate modeling:** the source of climate predictions are not easily understood and may seem like a black box. There are a limited number of models, some of which are proprietary, and the difficulty determining what goes into those models and what assumptions they are based upon, lead insurance regulators and commissioners to depend on information from private sector insurance risk managers.
- **The disclosure survey itself should perhaps be revisited with other goals in mind:** To the extent the disclosure survey was originally designed to examine the long-term solvency of insurance companies, it should be revisited if there is support for using it to promote private sector adaptation in reaction to insurance price signals. The survey's current questions may not be framed in a way to accurately capture risks and the range of responses to managing that risk in a way that is maximally beneficial to society.
- **The role of insurance commissions and their enabling legislation should be re-examined:** Though insurance regulation bears similarity across the country, it will be

³⁰ The specific notes of each small group discussion are set out in Appendix C.

important to clarify what regulators can legally consider, and how active they can be in encouraging insurance companies to offer incentives for adaptive private sector behavior.

- **The end goal needs to be revisited**— related to the purpose of the survey, agreement must be reached on what end we hope to achieve with disclosures before you can evaluate their potential for achieving those goals. If the goal is simply more accurate price signals – the answer may be that surveys could provide this, but with a lot of caveats. If the goal is to promote adaptive action on the part of private actors (homeowners, businesses), the answer of whether disclosures are an appropriate point of leverage is even less clear. The end goal matters.

IV. Conclusions and Recommendations

Based on the information input, discussion during the workshop and subsequent analysis of issues of concern, the workshop sponsors (CLEAR, CICS-NC, the Georgetown Climate Center, and the Emmett Institute on Climate Change and the Environment) recommend that the NAIC and state insurance commissioners consider taking the following steps:

- **Recommendation 1** – The purposes of gathering climate risk data from insurers need to be better clarified, and the information requested or required from insurers should be aligned with those purposes. If the purpose is to prod insurance companies to better pass along risk signals to encourage private sector behavior, that purpose should be acknowledged and any proposed survey instrument or other method of information-gathering should be tailored to that purpose.
- **Recommendation 2**- If climate risk data is to be used to spur better adaptive behavior, Insurance Commissioners should explore options for being more active in tailoring insurance products and pricing (such as allowing pricing that reflects predicted climate impacts and not just utilizing historical data) to better send signals to the private sector that buys insurance. We recommend that the National Association of Insurance Commissioners (NAIC) work with a subset of insurers to determine where opportunities may exist to offer lower insurance rates in return for better climate adaptation.
- **Recommendation 3** – The NAIC should set up a working relationship with organizations like CICS-NC and its education program for the private sector. As climate risks are refined, presented, and discussed with the private sector by CICS-NC, representatives of

the NAIC will find it beneficial to participate. This will assist in advancing access to current climate research information, including the emerging climate risk curves in various geographic areas, which in turn help better inform the ability to tailor insurance to encourage adaptation.

- **Recommendation 4-** The NAIC should consider tasking its Climate Change Global Working Group with trying to work with insurance companies on understanding and creating insurance products that could incentivize adaptation by policyholders, including products with different temporal scales. The NAIC should encourage adoption of such products where feasible.
- **Recommendation 5-** The NAIC and individual insurance commissioners also need to take on a leadership role as stewards of climate risk information within the states. Concerns about adaptive behavior and how to influence it should be part of regular reports to legislative and regulatory bodies within each state.

Ultimately this workshop represents the beginning of a longer and long-term discussion about how the government can encourage, facilitate, and even demand adaptive actions from the different parts of the private sector and how the government can shape the private sector response in a positive manner. This white paper proposing recommendations gleaned from information and discussion at the March workshop provides a starting point to further explore these topics.

Appendix A – List of participants and affiliations

Otis Brown	Cooperative Institute for Climate and Satellites – North Carolina/ NC State University
Jay Bruns	The Hartford Financial Services Group, Inc.
Michael Burger	Columbia University Sabin Center for Climate Change Law
Jenny Dissen	Cooperative Institute for Climate and Satellites – North Carolina/ NC State University
Victor Flatt	UNC CLEAR
Christopher Galik	The Nicholas Institute for Environmental Policy Solutions, Duke University
Jessica Grannis	Georgetown Climate Center
Dr. Mark Guishard	Risk Prediction Initiative, Bermuda Institute of Ocean Sciences
Sean Hecht	UCLA Emmett Institute on Climate Change and the Environment
Bryan Heckle	NC Department of Insurance
Paula Hennon	Partnership for Resilience, North Carolina Institute for Climate Studies / NC State University
Don Hornstein	UNC CLEAR
Jeff Hughes	UNC Environmental Finance Center
Dr. Andrew Keeler	East Carolina University
Ken Kunkel	Cooperative Institute for Climate and Satellites – North Carolina/ NC State University
Jesse Lueders	UCLA Emmett Institute on Climate Change and the Environment
Bob Mack	NC Department of Insurance
Sam Medlock	The White House Council on Environmental Quality
Max Messervy	Ceres
Frank Nutter	Reinsurance Association of America
Heather Payne	UNC CLEAR
Janet Peace	Center for Climate and Energy Solutions

Mack Pearsall	Pearsall Operating Company, Inc.
Amy Pickle	Nicholas Institute – Duke
Ed Richards	LSU Law Center
Linda Rimer	EPA
Amanda Rycerz	Cooperative Institute for Climate and Satellites – North Carolina/ NC State University
Dylan Sandler	Environmental Policy Consultant
Maria Savasta-Kennedy	UNC CLEAR
Lisa Schiavinato	NC SeaGrant
Dr. Gavin Smith	UNC Center for the Study of Natural Hazards and Disasters
Michael Vandenberg	Vanderbilt University Law School and Climate Center
Dr. Jessica Whitehead	NC SeaGrant

COMMISSIONERS

Commissioner Mike Kreidler – Washington Department of Insurance

Commissioner Wayne Goodwin – North Carolina Department of Insurance

Appendix B

Session Details

Session 1 – Federal Government’s Role in Climate Change Adaptation Update

After a welcome and orientation the workshop started with a presentation from Sam Medlock, detailed to the Council on Environmental Quality, summarizing federal efforts in the climate change adaptation arena. These included the work of the Interagency Task Force on Climate Change, as well as executive actions taken by the President to both slash emissions connected with federal agencies as well as requirements that state and federal agencies plan for climate change impacts.

- The Federal Government is increasing its role in climate adaptation
- That role is dependent on executive action and follow through by federal agencies
- Notable recent changes include an Executive Order requiring that FEMA not approve State Hazard Mitigation Plans that don’t examine climate risk.

Session 2 – Climate Data Quality and Availability

This session featured an in-depth presentation of the most current climate data available from the National Oceanic and Atmospheric Association National Centers for Environmental Information (formerly known as the NOAA National Climatic Data Center), as well as a presentation on how the Cooperative Institute for Climate and Satellites – North Carolina (CICS-NC), a partnership between NOAA and North Carolina State University, are trying to make this data available and useful to the private sector. This presentation discussed certainty and measurability of climate impact data surrounding severe/extreme weather events and temperature.

- The weather phenomena most closely associated with rising average temperature, such as increases in extreme precipitation events and heat waves over time, are the impacts that show the most robust linkage with climate change.
- Additionally, large scale weather phenomena, such as hurricanes, are more predictable than any single small scale event, such as a tornado or particular severe thunderstorms.
- Patterns of extreme weather events in many cases may not manifest themselves for at least 7 years. Year to year changes may or may not be attributed to natural variability around a changing climate norm.
- A question raised is whether longer multi-year climate patterns provide data relevant to economic loss risk on an annual scale, which is the term for which most insurance contracts are written.

Session 3 –Risk data and community vulnerability

The second day's presentations began with the topic of how and whether risk data can be used to lessen asset vulnerability. Gavin Smith, of the UNC Center of Excellence for Homeland Security and Natural Disaster, discussed the history of the government's willingness and ability to compensate communities after the occurrence of natural disasters.

- The government's current disaster compensation scheme provides a disincentive to both governments and the private sector to take efficient actions to avert climate induced risk.
- Government action is undercutting risk signals to which the private sector might otherwise react concerning high impact weather and climate events.
- This lessons the incentive for insurance companies to mandate pre-event actions which might mitigate future harms in exchange for lower premiums for impacts that are covered by the private insurance sector.

Session 4 – Private Sector Needs

Mack Pearsall, a business owner with multiple commercial real-estate properties, then discussed how climate information has impacted his business decisions.

- Education on climate risk is the most important component of behavioral modification in the private sector, but that expectation of future insurance premiums could also play a role.
- The private sector would like clear information and risk, both physical and economic, from climate change impacts.
- Insurance prices should be a mechanism for disclosing that information.

Session 5 – The importance of the messenger in climate information.

The next presentation, by Michael Vandenberg, focused on "climate messaging," or how climate risk is best communicated.

- Current research indicates that for most parties discussing climate change adaptation in general does NOT worsen action for climate change mitigation.
- Professor Vandenberg's new research, however, does suggest that the "messenger" of information may be important to members of the private sector incorporating that risk data in to their decision profile.
- Climate information "markets" could be created that used market decision makers to assess risk. Because private markets harness the information of all market participants, such information might be a more robust and accurate measure of climate risk.

- Additionally, private information messengers might also avoid some of the impact of political beliefs on climate information understanding that occur when information is mediated by the government.

Session 6 – The role of the insurance commissioner

The workshop next featured a panel discussion from Wayne Goodwin, the North Carolina State Insurance Commissioner and Mike Kreidler, the Washington State Insurance Commissioner. Both Commissioners have been active in the National Association of Insurance Commissioners (NAIC), and Commissioner Kreidler is head of the NAIC's climate project.

- From the perspective of these commissioners, mandating climate risk disclosure from insurance companies does provide a benefit, both in assessing insurance company solvency and in assisting the broader community in understanding climate risk.
- Commissioner Kreidler expressed his belief that more states adopting the survey requirements would improve the economic risk signal to the private sector.
- Commissioner Kreidler noted that the form of the survey might be improved and that more specific disclosures might provide better economic signals.
- Most state insurance commissioners are either elected or appointed, but in both cases they are subject to political pressure.
- State insurance requirements for affordability in insurance offerings across the state often dampen the price signal concerning actual risk (such as coastal construction).
- Insurers can be proactive in reducing their exposure to risk by getting involved with building codes and land-use practices.
- Regulators have a responsibility to make sure insurance companies are solvent, in the market for the long haul, and that consumers and communities aren't threatened by the inability to obtain or afford insurance.

Session 7 – The current market for reinsurance of statewide risk related to climate

Following the Insurance Commissioners, Donald Hornstein did a presentation describing both how state commissions impact and mute potential market signals, and also how reinsurance and catastrophe bonds do seem to be incorporating climate risk pricing for catastrophic risks in selling products.

- Risk models that product sellers use vary in their assessment of climate risk from catastrophic events, suggesting somewhat imperfect information.
- There are enough product providers of risk at a mega scale to provide some form of market signal for risk.

- Proposed legislative changes in North Carolina that embrace self-insurance models would tend to dampen market signals further by having the state and its taxpayers as insurers of last resort by after the event bond offerings.

Session 8 – The effectiveness of the current insurance climate survey data

The next panel examined the usefulness of the current climate survey data. Max Messervy, from Ceres, described Ceres analysis of responses for each survey and emphasized:

- The majority of insurance companies got a poor grade on how well they detail risk in response to the survey, but that
- larger insurance companies and those that underwrite more business seem to do a better job of risk analysis and disclosure.

Following the Ceres presentation, Jay Bruns, of the Hartford Financial Services Group, described the process of company disclosure, and then Frank Nutter, president of the Reinsurance Association of America commented on the climate risk disclosure requirement.

- Culture may play a role in the effectiveness of survey responses in altering insurance company behavior, since many of the best survey responses came from foreign based companies.
- No one on this panel believed that the impact of the climate risk survey at this time was very large.
- Is the risk disclosure mandated by the SEC possibly be a better source of this data than the insurance survey?

Appendix C – Notes from small group meetings

The five groups (facilitated by Jessica Grannis, Don Hornstein, Maria Savasta-Kennedy, Amy Pickle, and Chris Galick) reported the following bullet point summaries of their discussion:

Group 1 (Grannis)

- Discussion centered around disclosures and whether that leads to insurance companies better understanding risk which would lead to more accurate pricing which then would pass that understanding of risk on to consumers.
- Insurance companies are looking to optimize their bottom line, while commissioners are looking for affordability for consumers; this leads to a disconnect around what consumers should do based on disclosure. Any disclosure may or may not alter behavior.
- Also discussed the role of state statutes and revising the types of elements companies can consider.
- Biggest issue is that there is no definition of what CAT modeling is or what is actually considered during the modeling; need to understand what happens within the “black box” of CAT modeling, understand what the price signal is coming out of the modeling and what roles the consumer and insurance companies have.
- Timing is also an issue; right now, can only get a policy for one year. Question is how to distill data from climate scientists to insurers to the state commissioners and then to consumers.
- From consumer point of view, consumers want to manage costs; question becomes how to bring climatic risks from models to influence consumers’ mitigation practices.

Group 2 (Hornstein)

- Primary discussion about whether disclosure will help.
- If it is assumed that it might for the purposes of the conversation, discussion centered on trying to determine who is disclosing, what is being disclosed, and how to define “help.”
- Agreed that disclosure is either connected to the market and will translate to market signals or it just doesn’t matter.
- Discussed how, in the insurance industry, the investment side of the business is affected by climate risk; however, the two sides (investment and underwriting) don’t always talk to each other. An example was given of where the investment side provided the funding for building in flood plains, which the underwriting side then would not insure once it was built. It would be good if the investment side invested in assets that were

safe from climate risks, and investment indices would be helpful in that regard. It was acknowledged that the insurance companies are required by law to invest in highly liquid assets. Also noted that, in some insurance companies, the two sides do talk to each other more; for example, underwriting representatives sit on Environment committee.

- The group also discussed how a different business model – similar to that of Solar City – may benefit adaptation and mitigation efforts, where the insurance industry would pay the up-front capital costs of retrofits and those improvements would essentially be leased back to the consumer.

Group 3 (Savasta-Kennedy)

- Main discussion focused on what was being disclosed, and whether insurance companies are really the focus / appropriate messenger. May be looking for other solutions because the government is not adequately responding to climate change.
- Discussed timing and differences between climate models and insurance.
- Insurance companies may be uncomfortable with measuring climate change risk, and some of the easier-to-identify risk projections are things which aren't insured against (see chart from CICS presentation). There may not be a gap in information, but current disclosures are very general, not analytical. May want to look at scenario mechanisms for disclosure rather than narrative or disaggregated.
- It was noted that building codes really do make a difference.
- Had more discussion around what questions insurance companies are asking.
- May want to look at the Florida model, where modeling isn't public (remains proprietary), but assumptions need to be approved. This would make the modeling more transparent.
- Incentives could also influence decision making if it were used in addition to disclosure.

Group 4 (Pickle)

- First question discussed was whether or not disclosure is the right mechanism to get adaptation (putting aside how to define adaptation, which could have been another whole session). Couldn't agree on whether or not the insurance commissioner's role is the correct mechanism for increased adaptation, as commissioners may have too many regulatory or political considerations to appropriately increase adaptation.
- Discussion then changed to what the purpose of disclosure is, whether to support adaptation or to form a more efficient market. Group felt that overall disclosures are

good and the current level is fine, but more detail may help. Problem is with consumer engagement and education, and how to best address it.

- Questioned whether bonds and the bond market could provide an adequate market signal for increased adaptation. However, the government market signals may override this if subsidized or provides adaptation disincentives (like federal flood insurance).
- All agreed that better data translation is a good thing.
- Also brought up the temporal issue, where future rates may or may not reflect the long-term internal analyses. One idea was to have a longer policy, which was property-specific rather than owner-specific, with disclosures and policies running with the property deed.

Group 5 (Galik)

- Discussed numbers, methods and uncertainties.
- Questioned whether disclosure is a net benefit and who has the incentive to do what.
- Discussed whether disclosure would get to the objective – what are the incentives for disclosure, what is the state commissioner’s capacity to push for that disclosure, what are the incentives to provide disclosure (which may be different from the incentives to have disclosure).
- Also discussed the temporal disparity. Idea for potential path forward was to have the insurance industry have something similar to a utility company IRP – that may resolve the temporal disparity issue.