

**Testimony at U.S. Senate Commerce Committee hearing,  
“Examining the Financial Impacts Posed by Climate Change.”  
Carl G. Hedde, CPCU Head of Risk Accumulation**

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Good afternoon and thank you for inviting me to testify. I am Carl Hedde, Head of the Risk Accumulation Department at Munich Reinsurance America Inc., one of the largest reinsurers in the United States.

Founded in 1917, we have over 1,000 employees serving our clients in the U.S. Our parent company, Munich Re, is one of the world’s leading reinsurers.

Today I will share thoughts on the potential financial impacts posed by climate change, and on resiliency steps that society must undertake to mitigate the human and financial toll of our changing climate.

Let me begin with a quote from Dr. Peter Hoppe, Head of the Munich Re Corporate Climate Center, and a leading climate change expert. Dr. Hoppe said, “A look at the weather-related catastrophes of 2016 shows the potential effects of unchecked climate change. Of course, individual events themselves can never be attributed directly to climate change. But there are now many indications that certain events – such as persistent weather systems or storms bringing torrential rain and hail – are more likely to occur in certain regions as a result of climate change”.

The insurance industry relies heavily on historical loss information to make business decisions. However, the use of historical data assumes that the risk we see today is the same as it was in the past. This is not always the case. As an industry, we also rely on weather and climate data produced by NOAA.

Losses from weather catastrophes in the U.S. have increased in both frequency and severity over the past four decades. In the U.S., socioeconomic changes have played a substantial role in this increase, but do not explain the entirety of the changes. It is likely that changes in climate, whether from natural variability or due to man's influence, are playing a role in these trends.

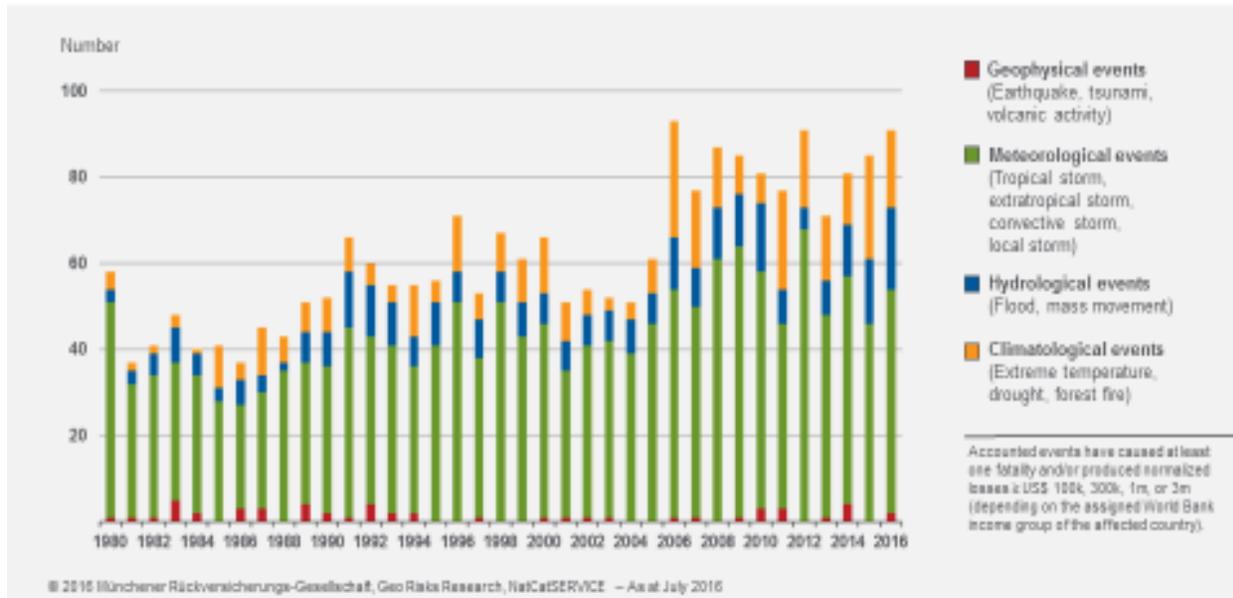
During 2016, the U.S. experienced approximately 91 large natural catastrophe – or “Nat cat” events, after removing small scale events. Of the 91 events, only two were caused by large earthquakes. The other 89 events have a climate connection. The frequency of earthquakes is remaining relatively constant.

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## Loss events in the U.S. 1980 – 2016

Number of relevant events by peril

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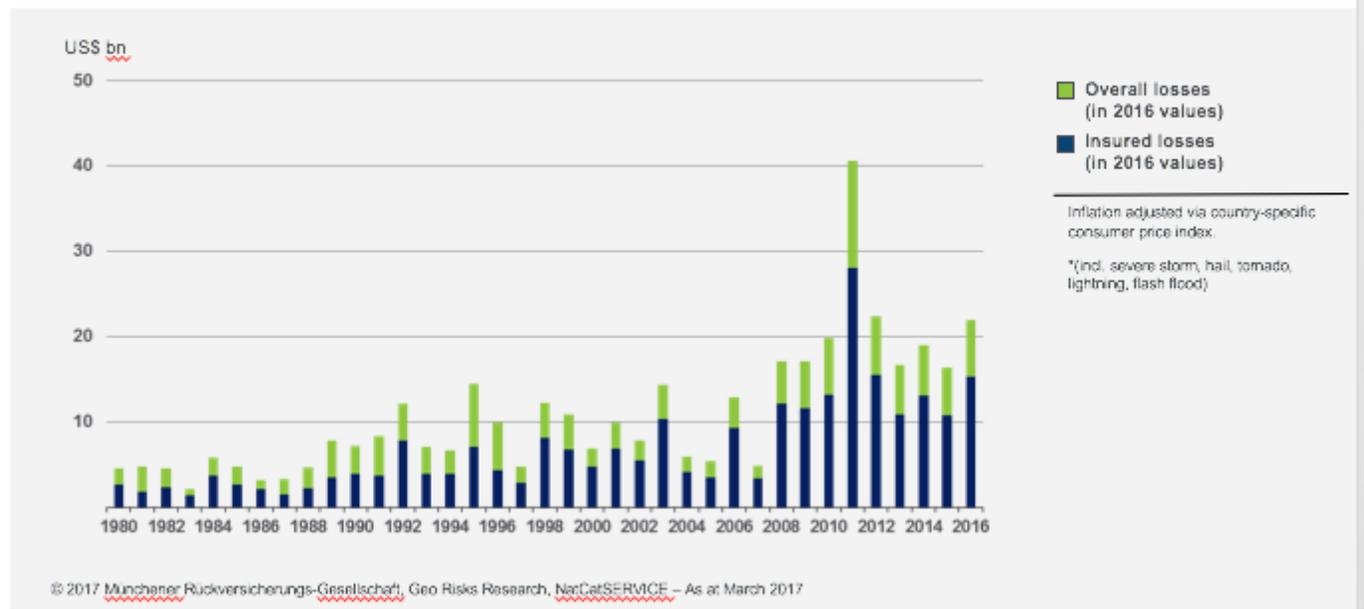
The upward trend in regard to losses from weather catastrophes is also apparent in the economic and insured losses for some weather-related perils, such as severe tornado and hail outbreaks in the U.S.

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## Convective storm events\* in the U.S. 1980 – 2016

### Overall and insured losses

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The economic loss total for these 91 events totaled approximately \$43.9 billion US dollars, of which \$23.8 billion, or 55% was covered by insurance. The difference between Economic and Insured Losses is the amount that is not insured and thus directly bourn by U.S. citizens in the form of retained loss, cost of disaster relief or lost economic opportunity.

As of January 4, 2017	Number of Events	Fatalities	Estimated Overall Losses (US \$m)	Estimated Insured Losses (US \$m)*
Severe Thunderstorm	43	40	19,000	14,000
Winter Storms & Cold Waves	7	55	1,700	1,000
Flood, Flash Flood	19	83	15,000	4,300
Earthquake & Geophysical	2	-	Minor losses	Minor losses
Tropical Cyclone	2	52	7,000	3,500
Wildfire, Heat Waves, & Drought (ongoing drought condition without loss estimation for the half year)	18	32	1,200	1,000
<b>Totals</b>	<b>91</b>	<b>262</b>	<b>43,900</b>	<b>23,800</b>

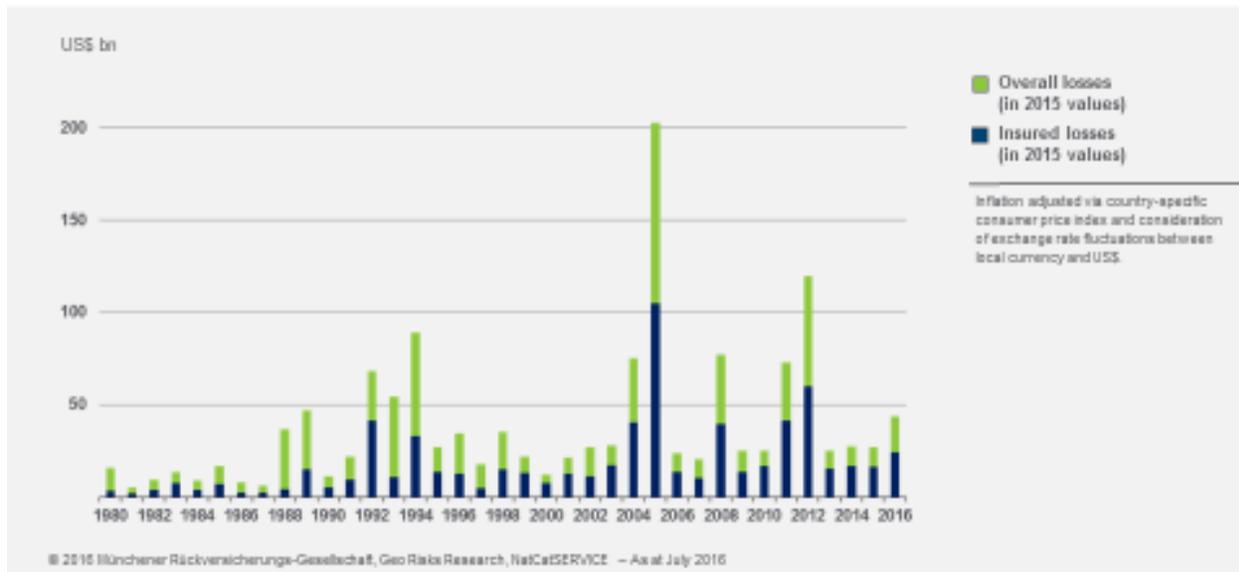
Within the U.S., approximately 50% of all losses caused by large natural catastrophes are not covered by insurance. In the U.S., weather related events such as Hurricanes and other wind related events generally have a higher penetration of insurance coverage as compared to Earthquake events. The coverage penetration for flood protection is also very low, and presents a critical exposure for our citizens.

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## Loss events in the U.S. 1980 – 2016

### Overall and insured losses

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## Adaptation

Human safety is our greatest concern when natural cat events occur. 262 lives were lost due to severe weather events in the U.S. in 2016.

Just weeks ago, on March 30<sup>th</sup> of 2017, a mother and her 3 year old daughter lost their lives in a relatively weak EF-1 Tornado with estimated winds of 100 MPH. The tornado occurred in Breaux Bridge, LA, placing their Mobile Home in the HUD zone 2, with Mobile Home design speed requirements of 100mph. Unfortunately it appears that this particular mobile home was likely built before HUD standards were adopted, and appears to have been placed on cinder blocks without tie-downs. Munich Re feels that if the Mobile Home was required to be properly sited and designed to the stronger HUD Zone 3 standards, this

tragic loss of life could have been avoided. Munich Re recommends that all Mobile Homes in the U.S. be designed to the stronger HUD Zone 3 standards, which are built to withstand winds of 110 MPH.

We constantly hear tragic stories of communities being devastated by severe weather events. These tragedies can be significantly reduced or even avoided if proper building codes and enforcement are in place. The citizens of Florida enjoy some of the most stringent building codes in the U.S. After Hurricane Andrew in 1992, Florida officials strengthened both the building codes and building code enforcement. It is time for building codes to be strengthened across the U.S...

### **Taking Action**

As a nation, we must build stronger homes. Most of our homes and businesses are not built to withstand the weather we have today, let alone the weather a changing climate might bring. The cost - in terms of lost lives, damage to homes and businesses, and community post-event viability - is devastating.

Munich Re supports a non-profit organization called “IBHS” – the Insurance Institute for Business and Home Safety. The insurance industry and IBHS have been conducting research into, and promoting stronger building codes and construction practices. Much of the findings are incorporated into the IBHS Fortified Program which essentially promotes Code+ construction standards.

Munich Re is committed towards the goal of making our country’s building stock more resilient than it is today. For example, Munich Re

funded the development of a “tablet app” in partnership with the IBHS that can help users build or retrofit a home to IBHS Fortified standards. The “app” is available for free on the iTunes app store, and we encourage all attendees at today’s meeting to test it out and distribute it to your constituents.

In summary, we must address climate change on multiple fronts. Munich Re supports a smart, balanced approach that protects the public, but does not stifle business or innovation. Researching and addressing the genesis of climate change is one step. Preparing our nation for the impacts of a changing climate must happen concurrently. National preparation must keep citizens safe in the face of the natural disasters we are experiencing. Safety starts at our homes, and extends to our schools and businesses. It is in the mutual interest of the federal government and the insurance industry to partner to find solutions in the areas of adaptation and risk transfer.

This makes absolute sense from a macroeconomic perspective, as lower subsequent losses will generate savings of several times the investment. Most importantly – these solutions can protect human lives.

Thank you again for providing this opportunity for me to testify.

**Munich Re** stands for exceptional solution-based expertise, consistent risk management, financial stability and client proximity. This is how Munich Re creates value for clients, shareholders and staff. In the financial year 2013, the Group – which combines primary insurance and reinsurance under one roof – achieved a profit of €3.3bn on premium income of over €51bn. It operates in all lines of insurance, with almost 45,000 employees throughout the world. With premium income of around €28bn from reinsurance alone, it is one of the world’s leading reinsurers. Especially when clients require solutions for complex risks, Munich Re is a much sought-after risk carrier. Its primary insurance operations are concentrated mainly in the ERGO Insurance Group, one of the major insurance groups in Germany and Europe. ERGO is represented in over 30 countries worldwide and offers a comprehensive range of insurances, provision products and services. In 2013, ERGO posted premium income of €18bn. In international healthcare business, Munich Re pools its insurance and reinsurance operations, as well as related services, under the Munich Health brand. Munich Re’s global investments amounting to €209bn are managed by MEAG, which also makes its competence available to private and institutional investors outside the Group.

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