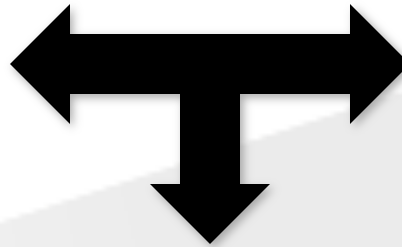


Mobilizing business and investor leadership to build a thriving, sustainable global economy

Investor Network

101 members currently
representing more than
\$12 trillion AUM



The Ceres Coalition

More than
130 organizations including
environmental experts,
public interest groups,
and investors.

Company Network

More than 75 members
in more than 20 sectors



Bloomberg

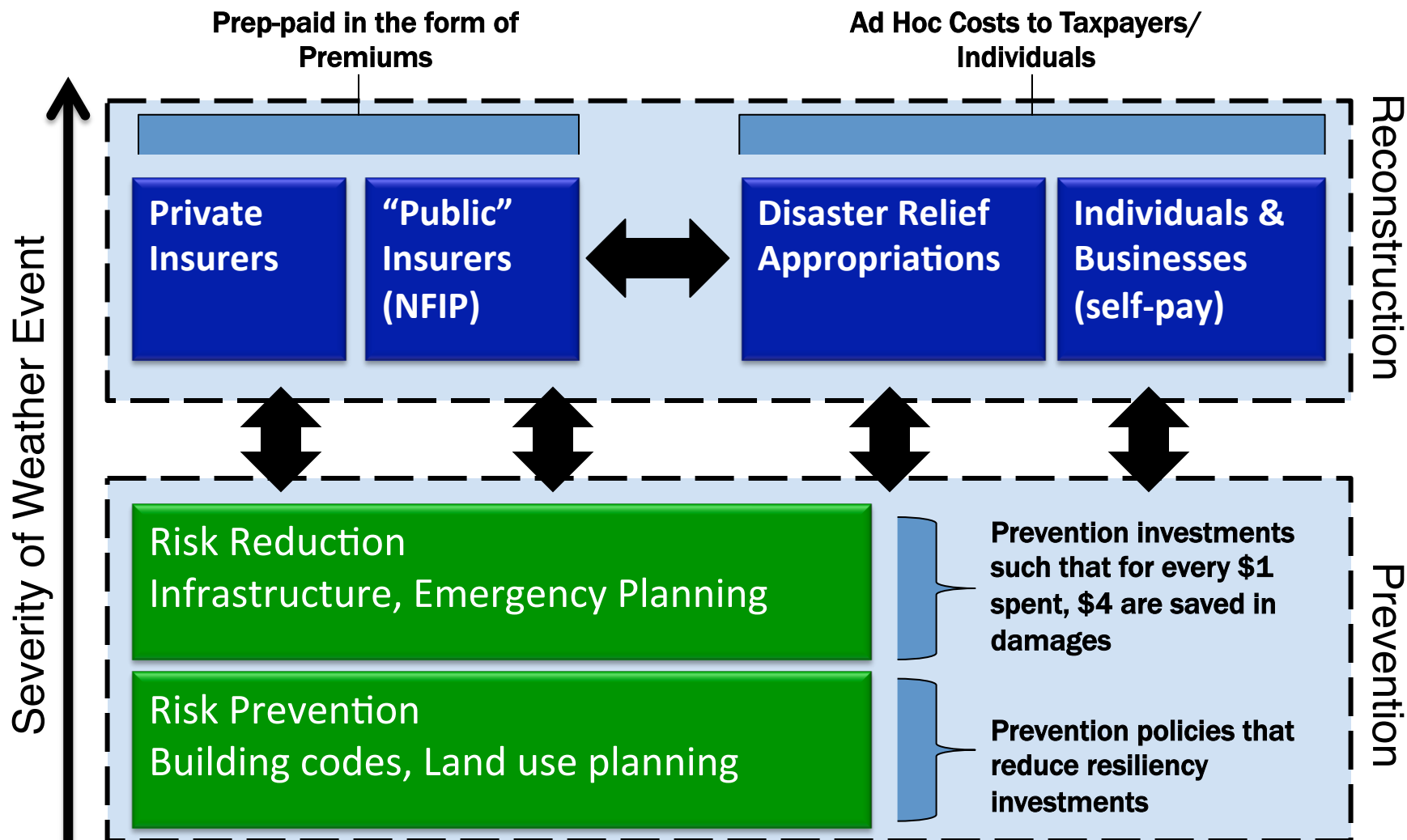


**WELLS
FARGO**



Urban Climate Resiliency Framework

Economic Losses on Impact





1

Cape May, NJ



2

Atlantic City, NJ



3

Sea Side Heights, NJ



4

Breezy Point, NY



12

Suffolk County, NY



11

East Haven, CT



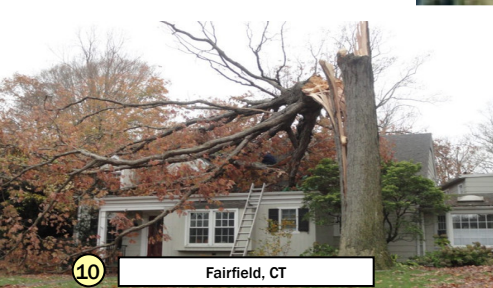
5

Staten Island, NY



6

Hoboken, NJ



10

Fairfield, CT



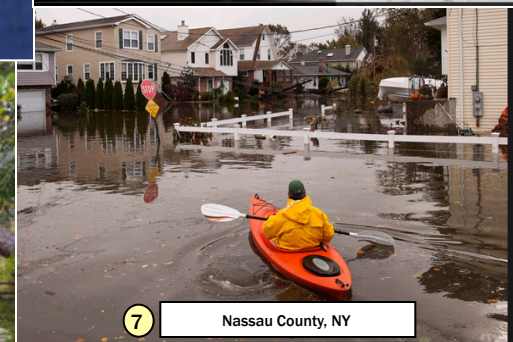
9

Darien, CT



8

Westchester County, NY



7

Nassau County, NY

Severe impacts of Hurricane Sandy

New York State

- 300'000+ buildings destroyed/damaged
- 19,729 flights cancelled
- 2 nuclear power plants down
- Stock Exchange closed 2 days
- New York Marathon Cancelled
- Estimated cost to NY \$40b
- Funding request for resilience measures \$9.1 billion

US

- 121 people killed
- Over 8 million customers without power
- Economic loss ~ \$70 billion
- Insurance loss ~ \$35 billion

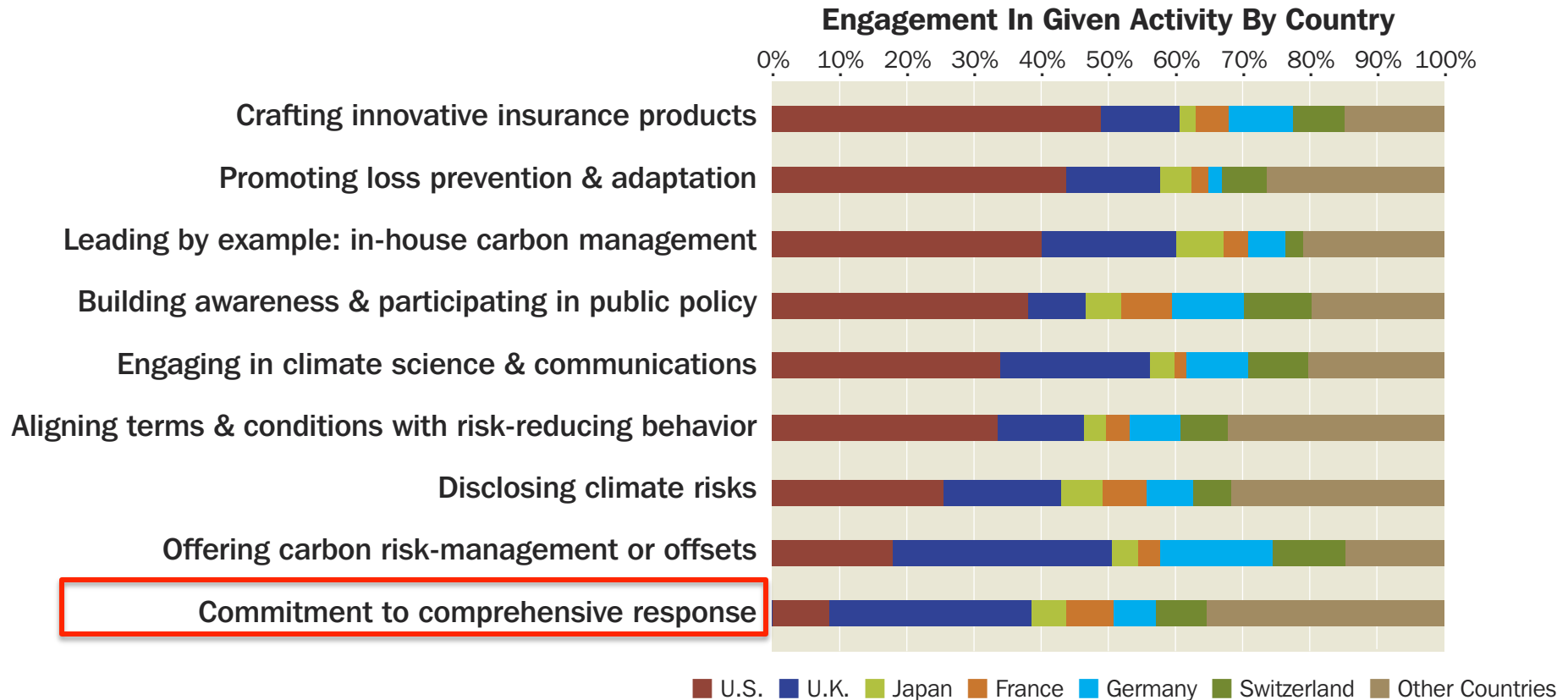
New Jersey

- Severe damage to infrastructure, mass transit and highway systems
- On average, 30 – 40 feet of beach lost along the coast
- 72,000 buildings in NJ impacted by the storm
- Estimated cost to NJ over \$30b
- Funding request for resilience measures \$7.4b





Opportunities for insurer engagement in building climate resiliency



Source: The Greening of Insurance, Evan Mills, December 2012

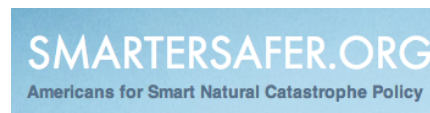


Insurers are partnering with a variety of national organizations



Building Science

- One of a kind research lab
- Researching construction techniques to reduce loss costs
- Residential & Commercial



NFIP Reform Advocate

- Advocate for National Flood Insurance Program reform
- Seek policies, such as tax incentives, that promote resiliency
- Risk-priced insurance



Practical Application

- Practical application of building science from IBHS
- Building FORTIFIED homes in costal areas with TRV grant money



Economic Analysis

- Financial analysis of the cost benefit of stronger building codes
- Third party analysis with prominent higher learning institution with internal risk management department



Building Code Advocate

- Public policy advocate of stronger building codes
- Advocating minimum statewide codes
- Stronger codes lead to reduced loss costs

Partnering to better understand risk and help policy makers



SMARTERSAFER.ORG has six principles aimed at **Ceres** reforms to the National Flood Insurance Program

1. **Build Smart**
2. **Encourage Safety**
3. **Use Nature**
4. **Insure Based On Risk**
5. **Assume Responsibility**
6. **Target Government Assistance**

The screenshot shows the SMARTERSAFER.ORG website. The header includes the organization's name and tagline, 'Americans for Smart Natural Catastrophe Policy'. A navigation bar contains links for 'About Us', 'Legislation', 'Resources', and 'News Articles'. The main content area is titled 'MITIGATION' and features a large image of palm trees in a storm. To the right of the image is a paragraph of text about encouraging disaster protection through incentives like tax credits. Below this is a link 'More on Mitigation »'. At the bottom, a horizontal bar displays three categories: 'RISK-PRICED INSURANCE' (with an image of a damaged house), 'MITIGATION' (with an image of palm trees in a storm), and 'FLOOD REFORM' (with an image of a flooded house).

SMARTERSAFER.ORG
Americans for Smart Natural Catastrophe Policy

[About Us](#) [Legislation](#) [Resources](#) [News Articles](#)

MITIGATION

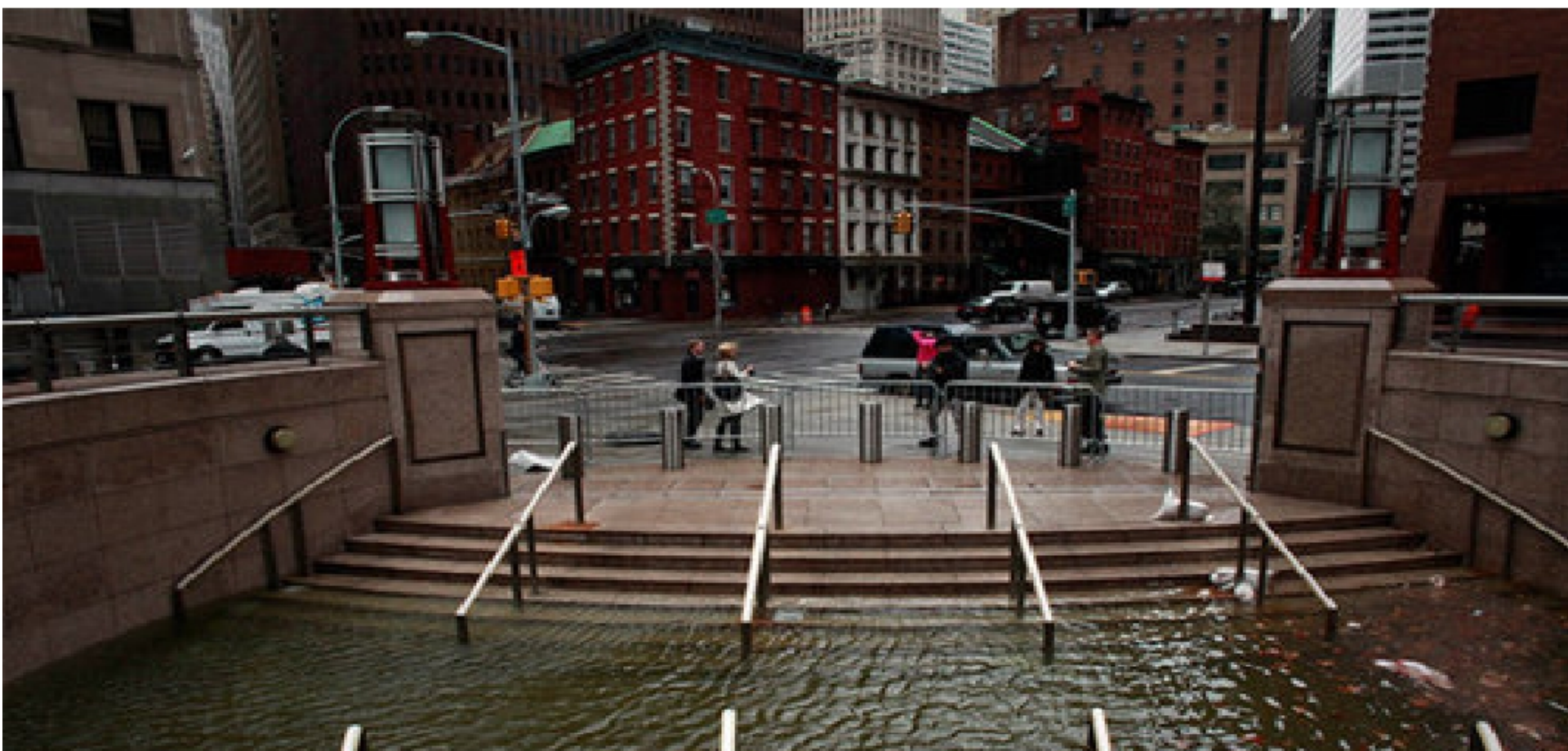
People who live in harm's way should be encouraged to protect themselves and their communities from natural disasters. Incentives, such as tax credits, should be given for measures that strengthen the ability of properties to withstand damage from natural disasters.

[More on Mitigation »](#)

 **RISK-PRICED INSURANCE**  **MITIGATION**  **FLOOD REFORM**

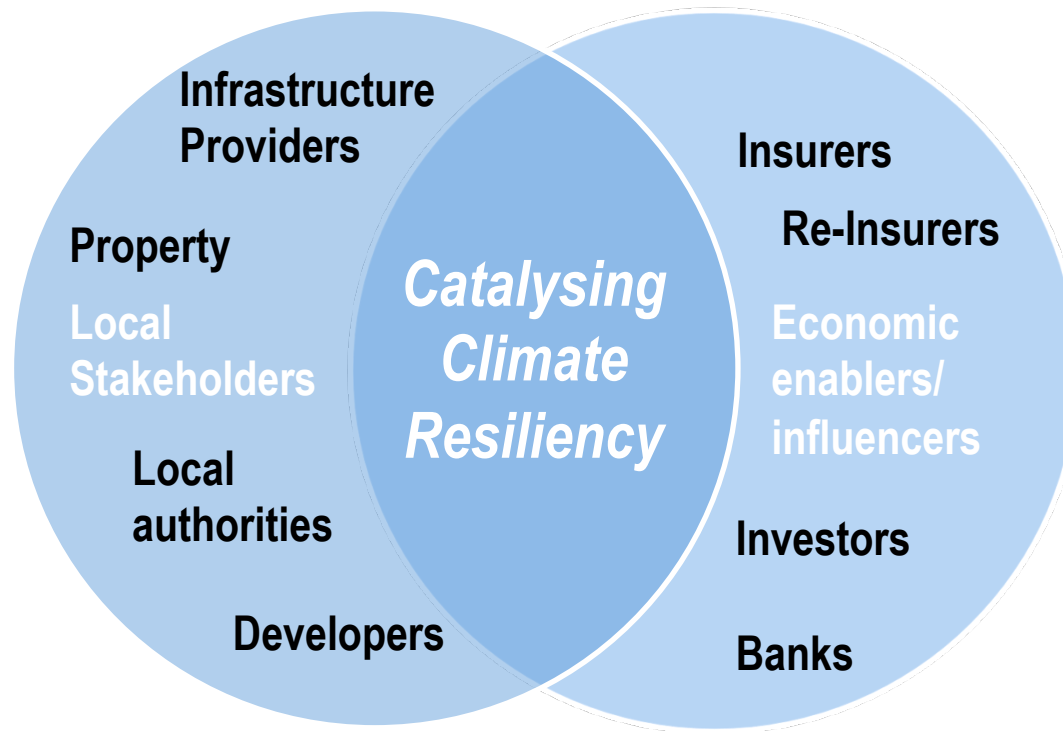
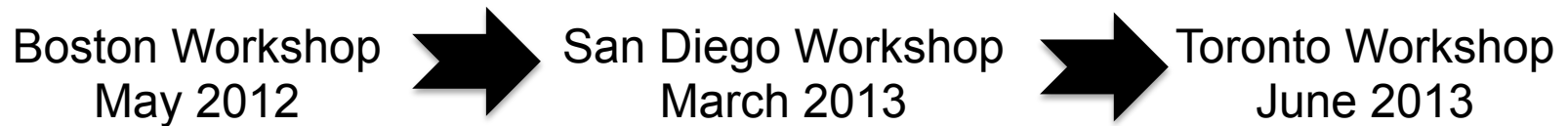


Climate change is causing growing risks to urban areas, e.g. due to flooding from sea-level rise, storm surge, and intense precipitation events.





Building Urban Climate Resiliency Workshops





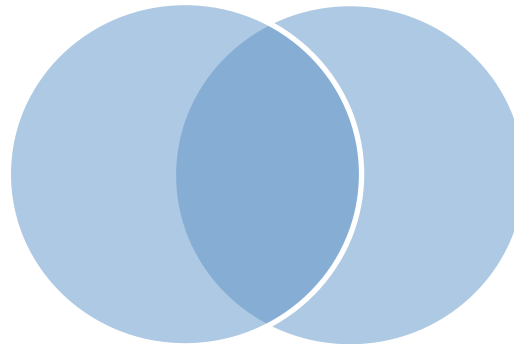
Workshop outputs - the best ideas for insurance sector collaboration on urban climate risk preparedness and reduction.

- **Improvements to Resiliency at the Single Entity or Single Infrastructure Element Level.** Actions that local government, insurers and other stakeholders could take now, at a single entity or single infrastructure element level, to help adapt a city's businesses, residents and infrastructure to climate change stresses.
- **New Approaches to Resiliency at the Community Level.** Innovative approaches to managing the stresses of climate change that go beyond single entities could help close the gaps and make a city more resilient, and thus insurable, over the long-term.





Collaboration Partners





Thank You!

Cynthia McHale, Director Insurance Program

<http://www.ceres.org/>



Climate Change: Insurance and the Public Response

MIIA Board Retreat and Planning Session

Falmouth, MA

August 26, 2013

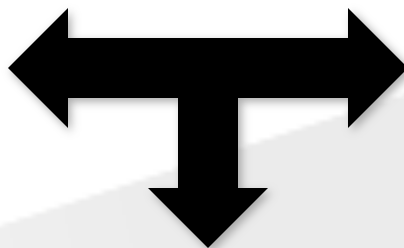
Cynthia McHale, Director Insurance Program, Ceres



Mobilizing business and investor leadership to build a thriving, sustainable global economy

Investor Network

101 members currently
representing more than
\$12 trillion AUM



The Ceres Coalition

More than
130 organizations including
environmental experts,
public interest groups,
and investors.

Company Network

More than 75 members
in more than 20 sectors



Bloomberg



WELLS
FARGO



What do we know today about climate change impacts in the US?

*“Climate change is **already affecting** the American people. Certain types of weather events have become more frequent and/or intense, including heat waves, heavy downpours, and, in some regions, floods and droughts. Sea level is rising, oceans are becoming more acidic, and glaciers and arctic sea ice are melting.*

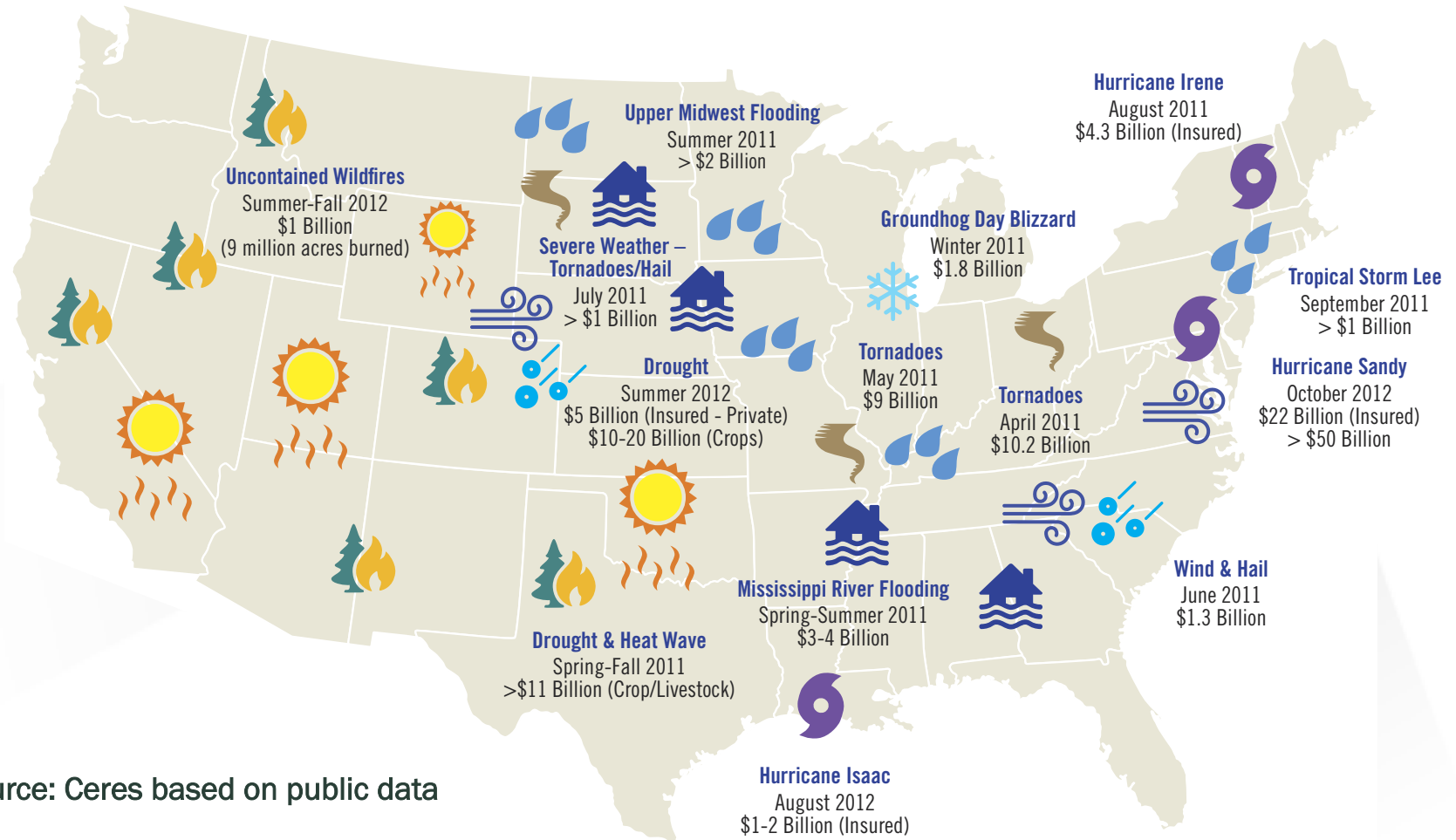
Climate change produces a variety of stresses on society, affecting human health, natural ecosystems, built environments, and existing social, institutional, and legal agreements.”

Federal Advisory Committee, U.S. Climate Assessment Report, January 2013



Major U.S. Weather Events, 2011 - 2012

(Loss figures are estimated economic losses unless otherwise noted)



Source: Ceres based on public data

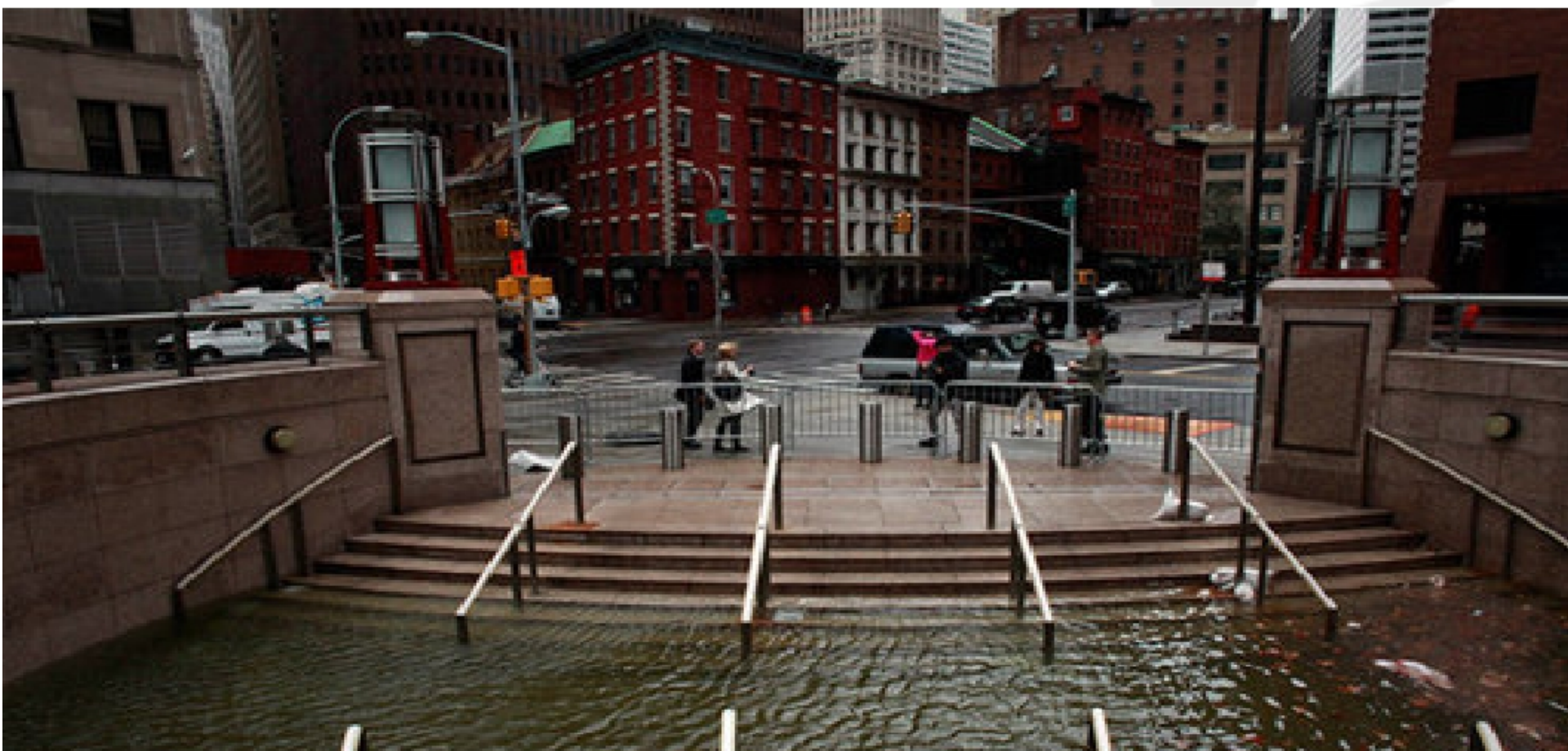
Expected Impacts of Climate Change in Massachusetts

	Resources		Ecosystem Services		Human Uses			
Climate Change Effects	Finfish	Shellfish	Wetlands	Marine	Coastal Property	Commercial Fisheries	City Infrastructure	Recreation
Sea Level Rise			✓	?	✓		✓	✓
More Precipitation	?	?	?	?	✓	?	✓	✓
Frequency/Intensity of Storms		✓	✓	?	✓	✓	✓	✓
Ocean Acidification	?	✓	?	✓		✓		✓
Ocean Warming	✓	✓	?	✓		✓		
Disease	?	?	?	✓		✓		✓

Source: Porter Hoagland, Marine Policy Center Woods Hole Oceanographic Center, "Climate Change, Changing Coasts: Some Economic Considerations," February 5, 2009.



Massachusetts towns and cities face growing risks due to flooding from sea-level rise, storm surge, and intense precipitation.



Severe impacts of Hurricane Sandy

New York State

- 300'000+ buildings destroyed/damaged
- 19,729 flights cancelled
- 2 nuclear power plants down
- Stock Exchange closed 2 days
- New York Marathon Cancelled
- Estimated cost to NY \$40b
- Funding request for resilience measures \$9.1 billion

US

- 121 people killed
- Over 8 million customers without power
- Economic loss ~ \$70 billion
- Insurance loss ~ \$35 billion

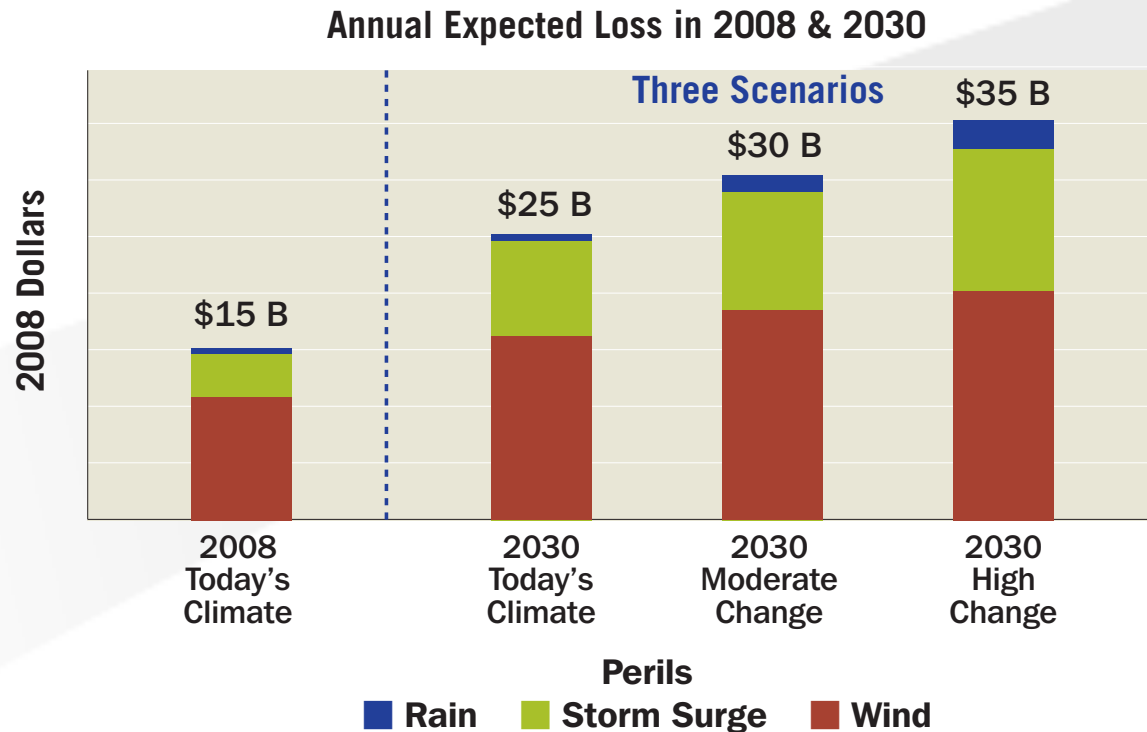
New Jersey

- Severe damage to infrastructure, mass transit and highway systems
- On average, 30 – 40 feet of beach lost along the coast
- 72,000 buildings in NJ impacted by the storm
- Estimated cost to NJ over \$30b
- Funding request for resilience measures \$7.4b



Future losses depend upon the degree of climate change

Florida Economics of Climate Adaptation Study



Source: Report of the Economics of Climate Adaptation Working Group, "Shaping Climate Resilient Development, A Framework for Decision-Making," 2009.

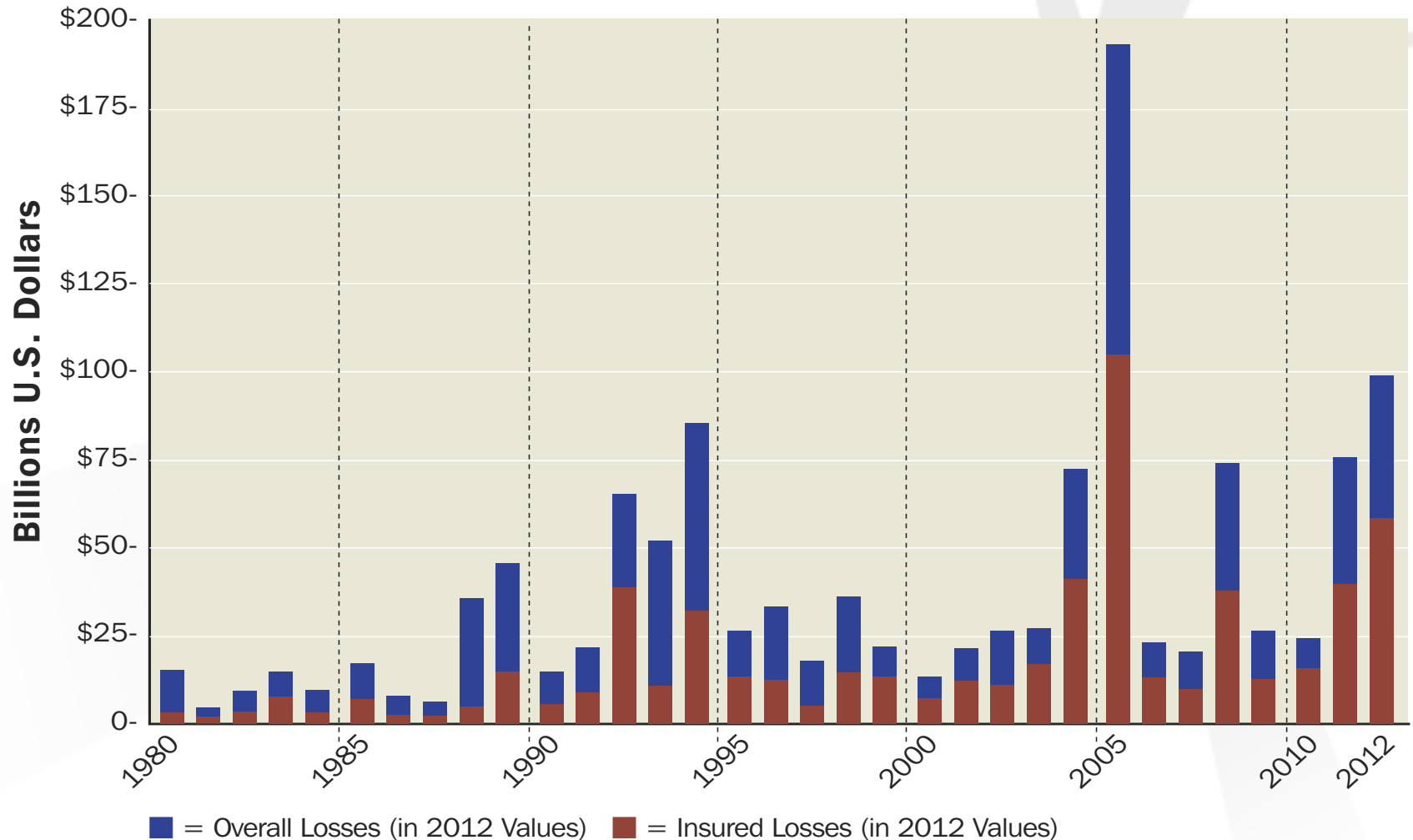
So what can we do right now?

- **Mitigation**
 - Invest in reducing our carbon emissions through energy efficiency, renewable energy and conservation
- **Adaptation**
 - Promote planning and action now that will prevent or minimize future damage (land use zoning, building codes)
- **Quantify the future risks**
 - *“Insurers could contribute to better understanding of the economic implications of climatic extremes and help on pre-emption...”* John Coomber, ClimateWise Chairman

Are insurers prepared for climate change?

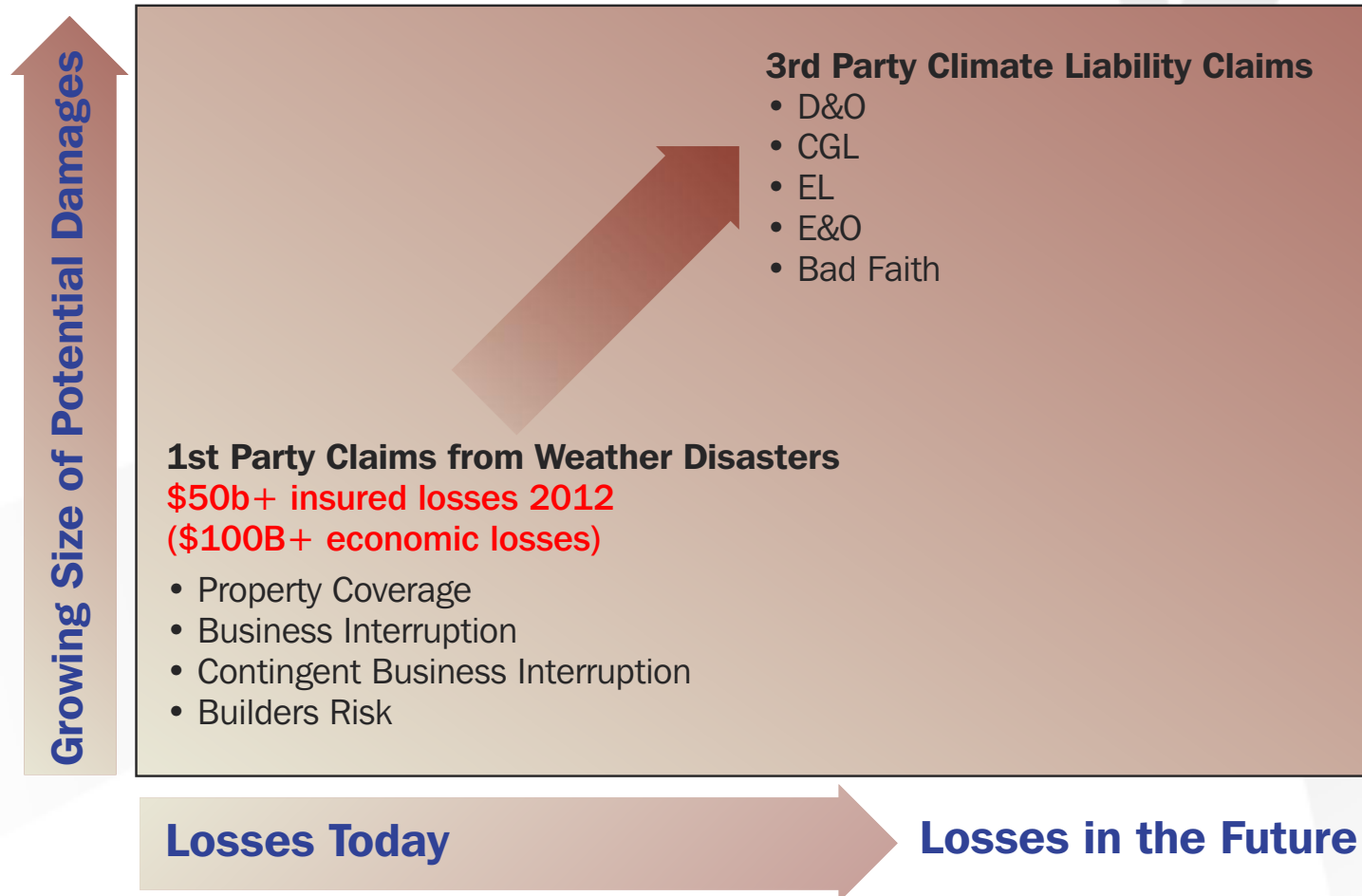
U.S. Natural Catastrophes, 1980 – 2012

Overall and Insured Losses, US \$b



Source: MunichRe NATCAT Service

Impact of climate risk on insurance products and risk management

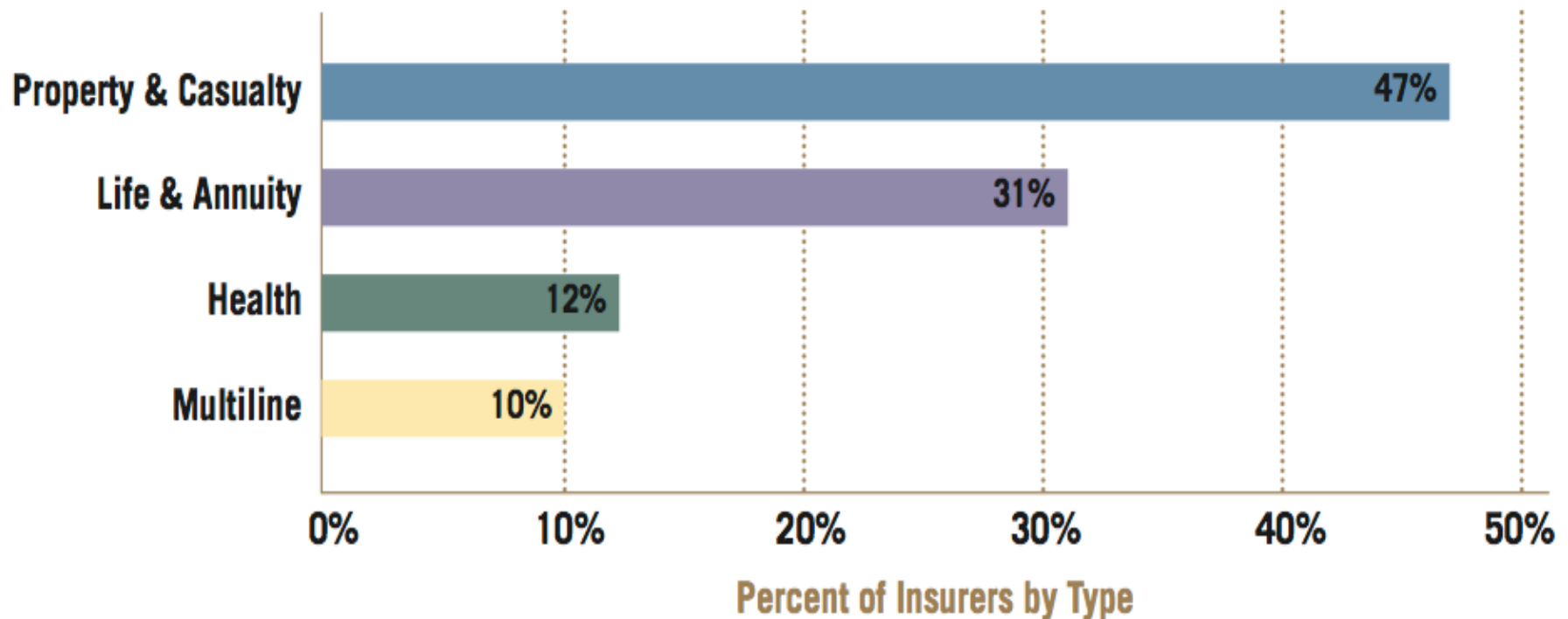


Source: Climate Change and Insurance, Carroll, Evans, Patton and Zimolzak, November 2012



Insurer Climate Risk Disclosure Survey*: 2012 Findings & Recommendations

Percent of Insurers by Lines of Business, (%)



* This report summarizes responses from 184 insurance companies to a survey on climate risk developed by the National Association of Insurance Commissioners (NAIC). In 2012 insurance regulators in California, New York and Washington required insurers that write in excess of \$300 million in direct written premiums, and are licensed to operate in any of the three states, to disclose their climate-related risks using this survey.

Key Findings

- **Only 23 of the 184 Companies have comprehensive climate change strategies**
 - ✓ **13 are foreign-owned**
 - ✓ **8 are P&C Companies**
 - ✓ **Belief in climate science still widely variant**
- **Few P&C insurers have policies in place to identify or manage the trends of global climate change.**
 - ✓ **Some insurers do not seem to understand (or acknowledge) the difference between climate variability and climate change**
- **Especially within Health and L&A, but even among some P&C insurers, many companies view climate change as an environmental issue immaterial to their business**



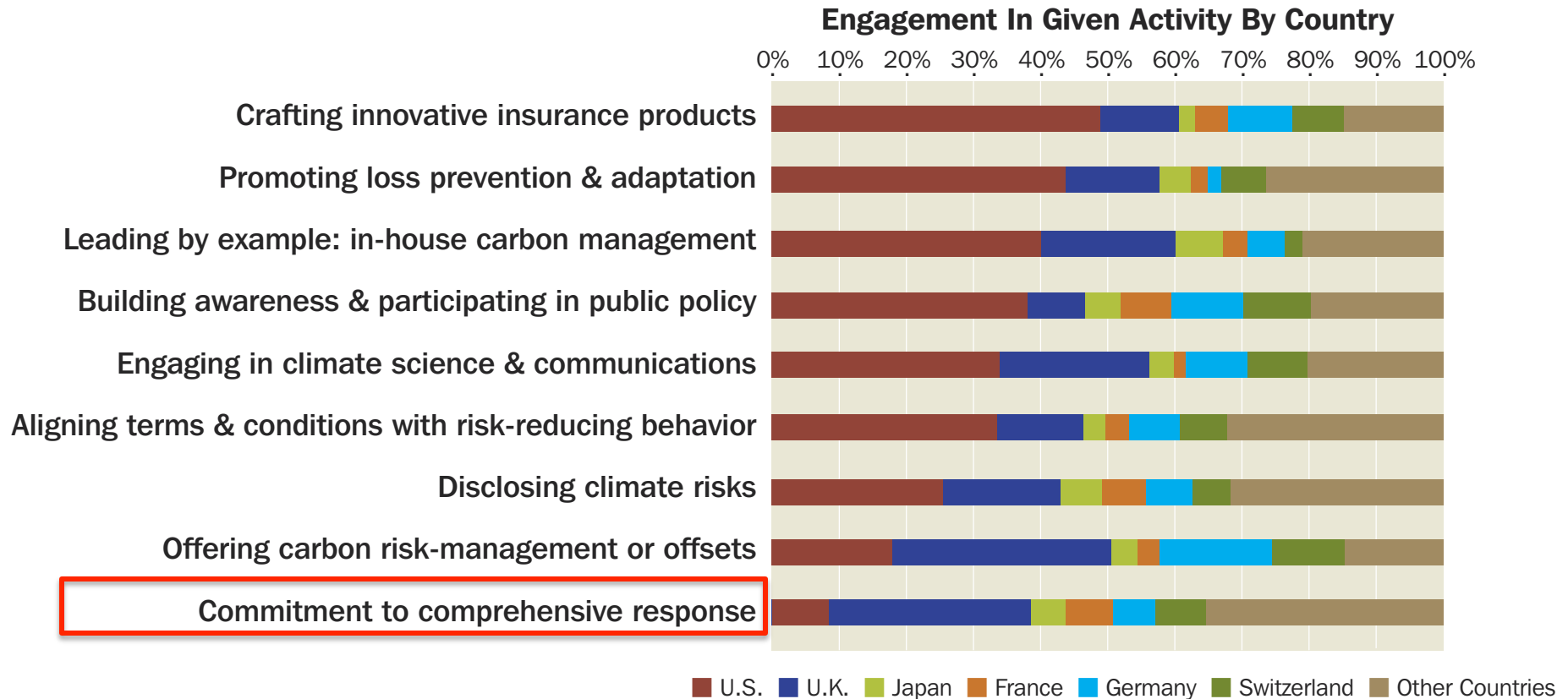
Key Recommendations for Insurers

Climate change is a corporate-wide strategic issue, affecting all functions, at all levels. Insurers will need to evaluate and price risk exposure in the context of climate change.

- Understand the influence of a warming climate on human systems, including forecasting of future catastrophe trends, disease pathways, population migration, infrastructure failure and adaptive responses;
- Use catastrophe models that anticipate the probable effects of climate change on extreme weather events;
- Update insurance pricing and underwriting practices to reflect changes in risks;
- Ensure that investment advisors and asset managers have established expertise on climate change risk assessment and management.

How could insurers help society manage the risks of climate change?

Opportunities for insurer engagement in building climate resiliency



Source: The Greening of Insurance, Evan Mills, December 2012



Insurers are supporting a variety of national organizations to manage risks and build resiliency.



Building Science

- One of a kind research lab
- Researching construction techniques to reduce loss costs
- Residential & Commercial



NFIP Reform Advocate

- Advocate for National Flood Insurance Program reform
- Seek policies, such as tax incentives, that promote resiliency
- Risk-priced insurance



Practical Application

- Practical application of building science from IBHS
- Building FORTIFIED homes in costal areas with TRV grant money



Economic Analysis

- Financial analysis of the cost benefit of stronger building codes
- Third party analysis with prominent higher learning institution with internal risk management department



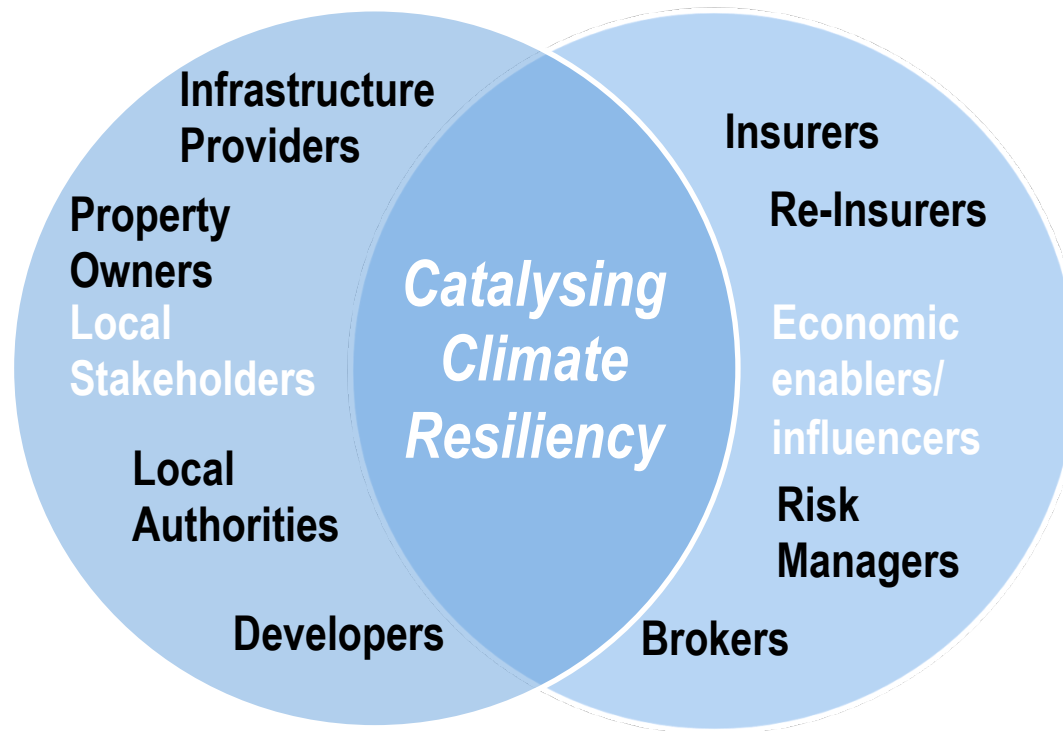
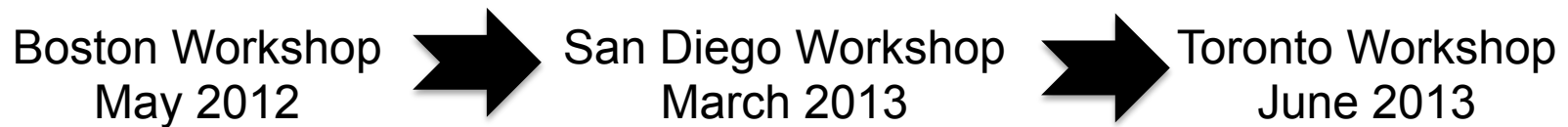
Building Code Advocate

- Public policy advocate of stronger building codes
- Advocating minimum statewide codes
- Stronger codes lead to reduced loss costs



Photo: Corsin Camichel (Flickr, Creative Commons license)

Building Urban Climate Resiliency Workshops





Workshop outputs - the best ideas for insurance sector collaboration on urban climate risk preparedness and reduction.

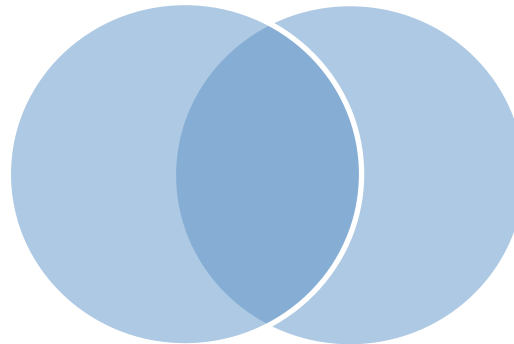
- **Improvements to Resiliency at the Single Entity or Single Infrastructure Element Level.** Actions that local government, insurers and other stakeholders could take now, at a single entity or single infrastructure element level, to help adapt a city's businesses, residents and infrastructure to climate change stresses.
- **New Approaches to Resiliency at the Community Level.** Innovative approaches to managing the stresses of climate change that go beyond single entities could help close the gaps and make a city more resilient, and thus insurable, over the long-term.



Photo: Corsin Camichel (Flickr, Creative Commons license)

Collaboration Partners

Insurance Advisory Panel





Thank You!

Cynthia McHale, Director Insurance Program

<http://www.ceres.org/>