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

Investor Network
101 members currently representing more than $12 trillion AUM

Company Network
More than 75 members in more than 20 sectors

The Ceres Coalition
More than 130 organizations including environmental experts, public interest groups, and investors.
Urban Climate Resiliency Framework

Economic Losses on Impact

Prep-paid in the form of Premiums

Private Insurers

“Public” Insurers (NFIP)

Disaster Relief Appropriations

Individuals & Businesses (self-pay)

Ad Hoc Costs to Taxpayers/Individuals

Reconstruction

Severity of Weather Event

Prevention

Risk Reduction
Infrastructure, Emergency Planning

Prevention investments such that for every $1 spent, $4 are saved in damages

Risk Prevention
Building codes, Land use planning

Prevention policies that reduce resiliency investments
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

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

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

Source: Swiss Re
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

Insurance Companies

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

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

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 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

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

Emergency power supply

New office/hotel/residential tower

Water line upgrading

Park redevelopment

Emergency egress
Grade/street redesign

Roof maintenance

New residential tower

Permeable surfacing

Retention pond

Storm water storage tank

HVAC upgrading

Retention wall

New light rail transit line

Joint copyright © 2013 Ceres, ClimateWise, The Next Practice Ltd, and the University of Cambridge Programme for Sustainability Leadership. All rights reserved.
Collaboration Partners

Ceres

ClimateWise

ICLEI

University of Cambridge

The Next Practice

Swiss Re

The co-operative

AVIVA

The San Diego Foundation
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

**Company Network**
More than 75 members in more than 20 sectors

**The Ceres Coalition**
More than 130 organizations including environmental experts, public interest groups, and investors.
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

<table>
<thead>
<tr>
<th>Climate Change Effects</th>
<th>Resources</th>
<th>Ecosystem Services</th>
<th>Human Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Finfish</td>
<td>Shellfish</td>
<td>Wetlands</td>
</tr>
<tr>
<td>Sea Level Rise</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Frequency/Intensity of Storms</td>
<td>✓</td>
<td>✓</td>
<td>?</td>
</tr>
<tr>
<td>Ocean Acidification</td>
<td>?</td>
<td>✓</td>
<td>?</td>
</tr>
<tr>
<td>Ocean Warming</td>
<td>✓</td>
<td>✓</td>
<td>?</td>
</tr>
<tr>
<td>Disease</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>

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

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

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

Source: Swiss Re
Future losses depend upon the degree of climate change

Florida Economics of Climate Adaptation Study

Annual Expected Loss in 2008 & 2030

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>2008 Today's Climate</th>
<th>2030 Today's Climate</th>
<th>2030 Moderate Change</th>
<th>2030 High Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perils</td>
<td>$15 B</td>
<td>$25 B</td>
<td>$30 B</td>
<td>$35 B</td>
</tr>
<tr>
<td>Rain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storm Surge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wind</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

1st Party Claims from Weather Disasters
$50b+ insured losses 2012
($100B+ economic losses)
• Property Coverage
• Business Interruption
• Contingent Business Interruption
• Builders Risk

3rd Party Climate Liability Claims
• D&O
• CGL
• EL
• E&O
• Bad Faith

Growing Size of Potential Damages

Losses Today  Losses in the Future

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, (%)

- Property & Casualty: 47%
- Life & Annuity: 31%
- Health: 12%
- Multiline: 10%

* 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

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

**Insurance Companies**

**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

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

**Building Code Advocate**
- Public policy advocate of stronger building codes
- Advocating minimum statewide codes
- Stronger codes lead to reduced loss costs
Building Urban Climate Resiliency Workshops

Boston Workshop
May 2012

San Diego Workshop
March 2013

Toronto Workshop
June 2013

Local Stakeholders
Economic enablers/influencers

Local Authorities
Infrastructure Providers

Property Owners
Developers

Insurers
Re-Insurers

Risk Managers
Brokers

Catalysing Climate Resiliency
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

- Insurance Advisory Panel
- Swiss Re
- the co‑operators®
- AVIVA
- ICLEI
- Local Governments for Sustainability
- The Next Practice
- Ceres
- ClimateWise
- University of Cambridge
Thank You!

Cynthia McHale, Director Insurance Program

http://www.ceres.org/